IP-900 Series
SOFTWARE
V01

USER'S GUIDE

FUJITSU

USING IP-900 Series SAFELY

Handling of This Manual

This manual contains important information regarding the safe use of IP-900 series. Before attempting to use this product, read this document thoroughly, paying particular attention to the "Notes on Safety." Be sure to keep this document in a safe and convenient location for quick reference.

Fujitsu makes every effort to prevent users and bystanders from being injured and to prevent property damage. Be sure to use this product in accordance with the instructions in this manual.

Warning on Electromagnetic Interference

The following notice is for USA users only.

IP-900 series has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Regulations. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction document, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The following notice is for Canada users only.

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

The following notice is for EU (European Union) users only.

This is Class A product of Electromagnetic Interference (EMI) standard. In a domestic environment this product may cause radio interference in which case the user may be required to make adequate measures.

This manual contains technology controlled by Foreign Exchange and Foreign Trade Law. This document or a portion thereof must not be exported (or re-exported) from Japan without authorization from the appropriate Japanese governmental authorities in accordance with such laws.

It is strictly inhibited to copy or reverse-engineer (reverse-assemble or reverse-compile) any programs included in the relevant equipment.

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PREFACE

This document explains how to use software for IP-900 series.

For information on how to install IP-900 series, connect cables and use buttons and LEDs, see the following manual:

- IP-900 Series User's Guide

This document is intended for system designers or administrators who use IP-900 series. It assumes that these users have a basic understanding of networks and video streaming.

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Product Use Environment

The product explained in this document is designed and manufactured for use in standard applications such as general office work, personal devices and household appliances. This product has not been designed or manufactured for special uses requiring extremely high levels of safety, or if the required level of safety cannot be ensured, for uses where a failure, operational error or some other factor could be life-threatening or cause a physical injury (such as nuclear-reactor control in atomic facilities, automatic flight control, air traffic control, mass transportation control, medical devices for life support, or missile launch controls in weapons facilities). (In this document, these special uses are referred to as "high-risk" uses.) The customer is urged not to use this product without taking measures to guarantee the level of safety required for such high-risk uses. Customers that are likely to use this product for high-risk applications are requested to consult our sales representative before embarking on such specialized use.

Note

The contents of this manual may be revised without prior notice.

ALERT INDICATIONS

This document uses various alert indications to urge the user to use the equipment safely, to prevent users and bystanders from suffering personal injury or property damage. Alert indication consists of alert signal and alert statement. The alert signals and their meanings are as follows.

⚠WARNING	This indicates a hazardous situation that could result in death or serious personal injury if you do not perform the procedure correctly.
⚠ CAUTION	This indicates a hazardous situation that could result in minor or moderate personal injury if the user does not perform the procedure correctly. This signal also indicates that damage to the product or other property may occur if the user does not perform the procedure correctly.

Alert Indication in This Manual

An alert statement follows an alert signal. An alert signal is provided in the center of a line. An alert statement is indented on both ends to distinguish it from regular text. Similarly, one space line is inserted before and after the alert statement.

(Example)

⚠WARNING

Electric shock
Consult the system administrator when checking the voltage at the outlet.
Otherwise, electric shock may result.

NOTE ON HANDLING THE PRODUCT

Maintenance

⚠WARNING

Users must not attempt to repair IP-900 series themselves. Consult the Fujitsu Service Center.

⚠ CAUTION

Read this document thoroughly before using the product. For clarification of any unclear points regarding the use of the product, consult the Fujitsu Service Center.

If a fault occurs, contact the Fujitsu Service Center with information on the fault and the alarm LED status.

CONTENTS

Chapter 1
Before Using This Product

This chapter explains items to be confirmed before using IP-900 series.

1.1 Main Features

IP-900 series is a video encoder that uses the high compression video encoding technology H.264. It enables real-time streaming of high definition (HD) and standard definition (SD) video through the optical fiber networks like FTTH.

The IP-900E can operate as an encoder and the IP-900D/IP-900IID can operate as a decoder. When operating as an encoder, the IP-900E encodes input video and audio signals into the H.264 format and distributes the results over an IP network in real-time processing. When operating as a decoder, the IP-900D/IP-900IID decodes encoded data received over an IP network and outputs the results as audio and video signals. In addition, the IP-900E operating as an encoder provides a recorder function (*1), which allows HD video data to be transmitted over a longer period of time even when the network bandwidth is low.

IP-900E encoder also features simulcast (dual encoding) capability to distribute two kinds of the encoded streams that are produced from a single video input by main and sub encoder of IP-900E in real-time.

Table 1-1 IP-900E Specifications

The main HD video and sub HD video functions become available when the HD option is added.

Item		Specification
Main HD video	Encoding format	H.264 HP@L4 H.264 MP@L4
	Input video format	1920 x 1080i (59.94 Hz) 1920 x 1080i (50 Hz) 1920 x 1080i (60 Hz) 1280 x 720p (59.94 Hz) 1280 x 720p (50 Hz) * Video input protection buffer OFF/ON can be specified.
	Bit rate	1920 x 1080: 4 to 27 Mbps 1440 x 1080: 4 to 27 Mbps 960 x 1080: 1 to 27 Mbps 1280 x 720: 4 to 27 Mbps 960 x 720: 4 to 27 Mbps 640 x 720: 1 to 27 Mbps
	Video PES	“1Field/1PES” / “1Frame/1PES” selectable
	Profile selection	Either High profile or Main profile can be selected.
	PPS interval	GOP/Picture selectable
	PPS ID	Fixed/Adaptive selectable
	Encoding control mode	Standard (IBBP), Low latency (IPPP), or Low latency (PPPP) can be selected.
	Pre-filter	HEAVY, MEDIUM, LIGHT, or OFF can be selected.
	Refresh cycle	Selection can be made in three stages.
	Interfaces	Input: HD-SDI and HDMI (HDCP not supported)
Main SD video	Encoding format	H.264 HP@L3 H.264 MP@L3

Item		Specification
	Input video format	720 x 480i (59.94 Hz) 720 x 576i (50 Hz) * Video input protection buffer OFF/ON can be specified.
	Bit rate	720 x 480: 1 to 10 Mbps 352 x 480: 500Kbps to 10Mbps 720 x 576: 1 to 10 Mbps 352 x 576: 500Kbps to 10Mbps
	Video PES	"1Field/1PES" / "1Frame/1PES" selectable
	Profile selection	Either High profile or Main profile can be selected.
	PPS interval	GOP/Picture selectable
	PPS ID	Fixed/Adaptive selectable
	Encoding control mode	Standard (IBBP), Low latency (IPPP), or Low latency (PPPP) can be selected.
	Pre-filter	HEAVY, MEDIUM, LIGHT, or OFF can be selected.
	Refresh cycle	Selection can be made in three stages.
	Interfaces	Input: SD-SDI, HDMI (HDCP not supported), and analog video
Sub HD video	Encoding format	H.264 HP@L4 H.264 MP@L4
	Input video format	1920 x 1080i (59.94 Hz) 1920 x 1080i (50 Hz) 1920 x 1080i (60 Hz) 1280 x 720p (59.94 Hz) 1280 x 720p (50 Hz) * Video input protection buffer OFF/ON can be specified.
	Bit rate	1920 x 1080: 4 to 27 Mbps 1440 x 1080: 4 to 27 Mbps 960 x 1080: 1 to 27 Mbps 1280 x 720: 4 to 27 Mbps 960 x 720: 4 to 27 Mbps 640 x 720: 1 to 27 Mbps
	Video PES	"1Field/1PES" / "1Frame/1PES" selectable
	Profile selection	Either High profile or Main profile can be selected.
	PPS interval	GOP/Picture selectable
	PPS ID	Fixed/Adaptive selectable
	Encoding control mode	Standard (IBBP), Low latency (IPPP), or Low latency (PPPP) can be selected.
	Pre-filter	HEAVY, MEDIUM, LIGHT, or OFF can be selected.
	Refresh cycle	Selection can be made in three stages.
	Interfaces	Input: HD-SDI and HDMI (HDCP not supported)
Sub SD video	Encoding format	H.264 HP@L3 H.264 MP@L3 H.264 MP@L1.3
	Input video format	1920 x 1080i (59.94Hz) 1920 x 1080i (50Hz) 1280 x 720p (59.94Hz) 1280 x 720p (50Hz) 720 x 480i (59.94Hz) 720 x 576i (50Hz)

Item		Specification
	Bit rate	720 x 480 (59.94Hz input): 1 to 10Mbps 352 x 480 (59.94Hz input): 500Kbps to 10Mbps 352 x 240 (59.94Hz input): 50 to 512Kbps 176 x 112 (59.94Hz input): 25 to 50Kbps 720 x 576 (50Hz input): 1 to 10Mbps 352 x 576 (50Hz input): 500Kbps to 10Mbps 352 x 288 (50Hz input): 50 to 512Kbps 176 x 144 (50Hz input): 25 to 50Kbps
	Video PES	"1Field/1PES" / "1Frame/1PES" selectable
	Profile selection	Either High profile or Main profile can be selected.
	PPS interval	GOP/Picture selectable
	PPS ID	Fixed/Adaptive selectable
	Encoding control mode	Standard (IBBP), Low latency (IPPP), or Low latency (PPPP) can be selected. * Can be selected when the encoding resolution is 720 x 480, 720 x 576, 352 x 480, or 352 x 576.
	Pre-filter	HEAVY, MEDIUM, LIGHT, or OFF can be selected. * Can be selected when the encoding resolution is 720 x 480, 720 x 576, 352 x 480, or 352 x 576.
	Refresh cycle	Selection can be made in three stages. * Can be selected when the encoding resolution is 720 x 480, 720 x 576, 352 x 480, or 352 x 576.
	Interfaces	Input: HD/SD-SDI, HDMI (HDCP not supported), and analog video
Main audio	Encoding format	MPEG-1 Audio layer 2 (stereo) MPEG-2 AAC (stereo)
	Sampling frequency	48 kHz
	Bit rate (for 2 channels)	MPEG-1 Audio layer 2: 128/256/384 kbps MPEG-2 AAC: 64/128/256 kbps
	Number of channels	2
	Interfaces	Input: HD/SD-SDI (embedded) - Up to 2 channels HDMI - Up to 2 channels Analog (unbalanced): - Up to 2 channels Output: None
Sub audio	Encoding format	MPEG-1 Audio layer 2 (stereo) MPEG-2 AAC (stereo)
	Sampling frequency	48 kHz
	Bit rate (for 2 channels)	MPEG-1 Audio layer 2: 128/256/384 kbps MPEG-2 AAC: 64/128/256 kbps
	Number of channels	2
	Interfaces	Input: HD/SD-SDI (embedded) - Up to 2 channels HDMI - Up to 2 channels Analog (unbalanced) - Up to 2 channels Output: None
Multiplexing method		MPEG-2 TS with time stamp, MPEG-2 TS
Error correction		FEC, ARQ, Pro-MPEG FEC
Transport protocol		UDP, RTP
Network interface		10 BASE-T/100 BASE-TX (PPPoE built in) 1 port

Item	Specification
Network time setting	SNTP client
Network management	SNMP agent
Data communication	RS-232C data communication
Superimpose	Superimpose up to four character string or time indication into input video
Local recording and file transfer (*1)	Supported CF cards: 4-GB, 8-GB and 16-GB cards * Recording can be performed with a system rate of 14 Mbps or less. Recording and acquisition can be performed simultaneously for the system rate of 6 Mbps or less.

*1: CF cards are separately sold options.

Table 1-2 IP-900D/IP-900IID Specifications

Item		Specification
Video decoding	Encoding format	H.264 HP@L4 H.264 MP@L4 H.264 HP@L3 H.264 MP@L3 H.264 MP@L1.3 MPEG-2 MP@ML (IP-700II stream reception)
	Output video format	1920 x 1080i (59.94Hz) 1920 x 1080i (50 Hz) 1920 x 1080i (60 Hz) 1280 x 720p (59.94 Hz) 1280 x 720p (50 Hz) 720 x 480i (59.94 Hz) 720 x 576i (50 Hz)
	Bit rate	1920 x 1080: 4-27Mbps 1440 x 1080: 4-27Mbps 960 x 1080: 1-27Mbps 1280 x 720: 4-27Mbps 960 x 720: 4-27Mbps 640 x 720: 1-27Mbps 720 x 480: 1-10Mbps 352 x 480: 500Kbps-10Mbps 352 x 240: 50-512Kbps 720 x 576: 1-10Mbps 352 x 576: 500Kbps-10Mbps 352 x 288: 50-512Kbps 176 x 112: 25-50Kbps 176 x 144: 25-50Kbps
	Interfaces	Output: HD/SD-SDI (IP-900IID), HDMI (HDCP not supported) and analog
Audio decoding	Encoding format	MPEG-1 Audio layer 2 (stereo) MPEG-2 AAC (stereo)
	Sampling frequency	48 kHz
	Bit rate (for 2 channels)	MPEG-1 Audio layer 2: 128/256/384 kbps MPEG-2 AAC: 64/128/256 kbps
	Number of channels	2
	Interfaces	Output: HDMI - Up to 2 channels Analog (unbalanced) - Up to 2 channels
Multiplexing method		MPEG-2 TS with time stamp, MPEG-2 TS, MPEG-2 PS (IP-700II stream reception)
Error correction		FEC, ARQ, Pro-MPEG FEC
Transport protocol		UDP, RTP
Network interface		10 BASE-T/100 BASE-TX (PPPoE built in) 1 port
Network time setting		SNTP client
Network management		SNMP agent
Data communication		RS-232C data communication

1.2 Typical Application Examples

This section provides system configuration examples.

The basic configuration is for video transfer via point-to-point connections. With this configuration, a camera is connected to the encoder, and video data is transferred to the decoder over the Internet, and then output to the monitor.

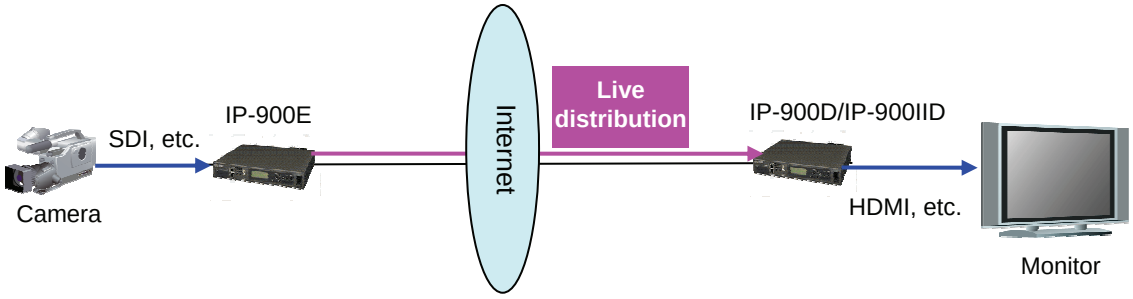


Figure 1-1 System configuration example: Broadcast materials transfer and live relays

Just like the IP-9500, the IP-900E can also be used to relay images through video transmission from the IP-900E to an IP-9500D.

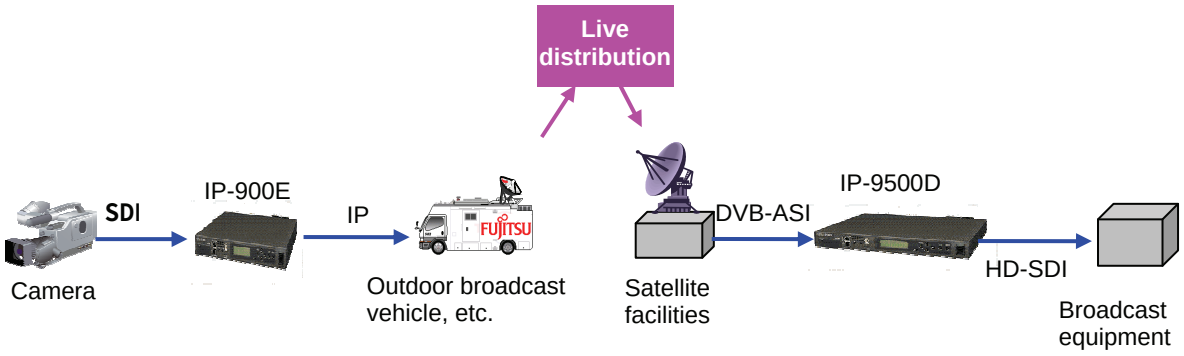


Figure 1-2 System configuration example: SNG

Chapter 2
Installation & Operation

This chapter explains how to install IP-900 series.

2.1 Updating the Software

This section explains the procedure for updating the software for the IP-900 series as well as the procedure for applying for an HD option license.

The software for the IP-900 series is pre-installed at product shipment. For this reason, you do not need to install the software before using the IP-900 series. When updating the software to the latest version, use the following procedure.

2.1.1 Installation Procedure

(1) Access method

Access IP-900 series Web page from the Web browser.

The default IP address of the IP-900 series as it is shipped from the factory is 10.0.0.1. Temporarily disable the proxy setting on your Web browser and then type "http://10.0.0.1" to access the Web page.

(2) Installation page

IP-900 ENCODER or IP-900 DECODER screen appears. Click SOFTWARE MANAGEMENT in the left frame of the Web browser screen. The Software management window (installation, etc.) appears in the right frame of the Web browser screen.

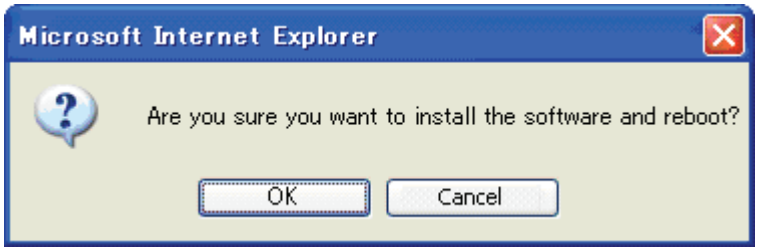
Figure 2-1 Installation Window

(3) Selecting software

Select installation file field. Select the file of the firmware to be updated.

(4) Starting installation

Click the INSTALL button. The following confirmation dialog box appears. Click the OK button to start installation. Upon completion of installation, IP-900 series is automatically rebooted.



* If the version of the firmware that to be installed is earlier than the one that is currently installed on the IP-900 series, you can install it in the maintenance mode of the device. The device can be booted as maintenance mode by pushing MNT button, and then the device is initialized. Click the OK button to start the installation process if initialization will raise no problems.

(5) Verifying the startup

Display the IP-900 series setup window from the Web browser, and verify that the new software has been installed and started.

⚠ CAUTION

Do not power off or press the MNT button during installation. Doing so may prevent IP-900 series from starting.

Do not access another Web page during installation. Otherwise, you may lose information on the progress.

2.1.2 Installing an HD Option License

In the IP-900 series, you can upgrade the device functions by purchasing an HD option license and installing it on the main unit.

(1) Applying for an installation key

If you have purchased an HD option license separately from the IP-900 series, you need to apply for an installation key to enable the function upgrade.

To apply for an installation key, enter the necessary information in the application form "HDOP_LicenseRequestSheet.txt," which is included in the top directory on this document CD-ROM, and send the form by e-mail to tnb3-ip9@ml.css.fujitsu.com .

When sending the file, you must specify the device serial number of the IP-900 series on which you want to install the upgrade function. You can obtain the device serial number from the label attached to the bottom of the IP-900 series or from the device serial number field on the [Common] - [Operation & Status] page of the IP-900 series configuration Web page.

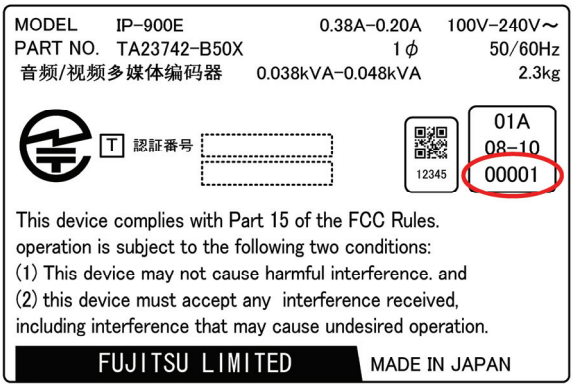


Figure 2-2 Label at the bottom of the IP-900E (example)

Figure 2-3 IP-900 series Web page (example)

(2) Entering the option license key

Enter the installation license key you have obtained with the application procedure.

Connect to the IP-900 series using a Web browser, and then click [Install] in the left frame of the Web page. The right frame displays the installation page (for installation and related operations). In the option license field, enter the installation key obtained in Step (1) above.

Figure 2-4 Option License Installation

(3) Starting installation

Click the INSTALL button. The confirmation dialog box shown above appears. Click the OK button to start installation.

⚠ CAUTION

Do not turn off the power or press the MNT button during installation. Doing so may make the IP-900 series fail to start.

Do not access another Web page during installation. Otherwise, you may lose the installation progress information.

2.2 Equipment Operation

This section explains how to operate IP-900 series Software.

The Software can be operated through the Web screen or the front panel.

2.2.1 Operation through Web Screen

All IP-900 series settings and status information can be checked through the Web screen. See Chapter 3, "Web Operation," for more information.

2.2.2 Notes

◆In the case of failure in automatic acquisition of an IP address

When IP-900 series starts, the LAN port:

(1) Cannot access the DHCP server

(2) Attempts to but fails to set up a PPPoE connection.

If the conditions in (1) and (2) above are met, all 0s (zero) are displayed and IP address acquisition is repeated.

Take proper corrective action such as reviewing the settings on the DHCP and PPPoE servers or the IP address setting on IP-900 series. (See also Section 5.1, "Troubleshooting.")

◆Forcibly changing to the fixed IP address from DHCP, PPPoE

Start the IP-900 series by turning on the power while holding down the MNT button (for about 10 seconds) until the RDY LED lamp starts blinking in orange. For this startup, the IP address and subnet mask are assumed temporarily restored to the settings at shipment from the factory (LAN port with an IP address of 10.0.0.1 and a subnet mask of 255.0.0.0).

Use this method to make the IP-900 series initial settings from a PC (*).

* When running the IP-900 series product with the default IP address, ensure that it is disconnected from your network.

After configuring the settings as suitable for your network, connect the product to your network. Having the product is connected to your network while the default settings are left unchanged may cause unexpected problems on your network.

If you started the product while holding down the MNT button, set the IP address and subnet mask of the PC as follows:

- LAN port IP address: 10.aaa.bbb.ccc
(aaa and bbb can be any number from 0 to 255 and ccc can be any number from 2 to 255. Note, however, that the resulting address must be other than 10.255.255.255.)
- LAN port subnet mask: 255.0.0.0

◆Powering off on PPPoE connection

If you turn off the power to the IP-900 series while it is connected via PPPoE-connection, the IP-900 series may take extra time to establish the next connection depending on the network conditions. To prevent this, use the following procedure to turn off the power to the IP-900 series to ensure that the PPPoE termination procedure is performed.

Hold down the MNT button for three seconds. When the software finishes termination processing and the product becomes ready for power-off, the RDY LED goes off.

After verifying that the RDY LED has gone off, turn the power switch to the "○" position. The PWR LED goes off, indicating that the power is turned off.

Chapter 3
Web Operation

This chapter explains how to operate individual functions from the Web browser.

Note: For information on the IP-900E, see Section 3.1, "Starting Up," Section 3.2, "Common Menu," Section 3.3, "Encoder," and Section 3.4, "Recorder." For information on the IP-900D/IP-900IID, see Section 3.1, "Starting Up," Section 3.2, "Common Menu," and Section 3.5, "Decoder."

3.1 Starting Up

3.1.1 Login

By default, the network password window shown below is invalid (not displayed).

To enable the network password function, set the user name and password by following the instructions in Section 3.2.4, “Basic.”

From the upper part of the Web screen, select [COMMON], [ENCODER], [DECODER] and [RECORDER] to display these menus.

* Microsoft® Internet Explore 6.0 SP2 is the recommended Web browser.

Figure 3-1 IP-900E Software Window Example

Figure 3-2 IP-900D/IP-900IID Software Window Example

3.1.2 If the Screen is Not Accessible

For some time after the power-on or reboot, you may not be able to access the screen normally. Please wait for about 60 seconds before starting access.

3.2 Common Menu

3.2.1 Configuration Data

In the IP-900 series terminology, the set of parameters required for operation is called "configuration data." IP-900 series has a data storage area in which up to 10 sets of configuration data can be stored. By storing up to 10 sets of configuration data in advance in the storage area, it can be used by switching with ease between these sets of configuration data.

For instance, it is useful in switching between encoder and decoder, changing resolution or bit rates or switching the network interfaces including PPPoE, DHCP, static IP, etc.

To easily register these 10 sets of configuration data, you can use the procedures explained in Section 3.2.2, "Selecting Configuration Data," and Section 3.2.3, "Copying Configuration Data."

Table 3-1 Parameters Preprogrammed in Configuration Data lists the parameters, of which 10 sets can be stored independently as configuration data. For detail information on the individual parameters, see the respective sections shown in the reference column in the table below.

Table 3-1 Parameters Preprogrammed in Configuration Data

Category	Window Name	Group Name	Reference
COMMON	BASIC	Ethernet common setting	**3.2.4 Basic**
		IPv4 network settings	
		IPv6 network settings	
		Other settings	
	TIME ZONE & TIME SERVER	Time zone setting	**3.2.5 Time Zone & Time Server**
		Time server settings	
	DATA PORT	Operation settings	**3.2.6 Data Port**
		Port number settings	
		RS-232C settings	
	SNMP	Operation settings	**3.2.7 SNMP**
ENCODER	SETTINGS	AV input settings (Video)	**3.3.1 Setting (Encoder)**
		AV input settings (Audio)	
		Output interface settings (Main encoder ethernet)	
		Output interface settings (Main encoder ethernet port)	
		Output interface settings (Sub encoder ethernet)	
		Output interface settings (Sub encoder ethernet port)	
		Main encoder settings (Encode)	
		Sub encoder settings (Encode)	

Category	Window Name	Group Name	Reference
	ENCODER ADDRESS REPORT	Main/Sub Report settings	**3.3.2 Encoder Address Report**
		Main/Sub Destination settings	
	SUPERIMPOSE	Main/Sub encoder superimpose settings	**3.3.3 Superimpose**
RECORDER	SETTINGS	Recorder settings	**3.4.1 Setting (Recorder)**
DECODER	SETTINGS	Input interface settings (Decoder ethernet)	**3.5.1 Setting (decoder)**
		Input interface settings (Decoder ethernet port)	
		AV output setting (Video)	
		Decoder settings (Decode)	

3.2.2 Selecting Configuration Data

Click LOAD CONFIGURATION in the left frame of the Web screen to display the Configuration data window in the right frame.

Figure 3-3 Configuration Data Window

◆Registering configuration data

Select data numbers 1 to 10 from the drop-down list menu in the configuration data field.

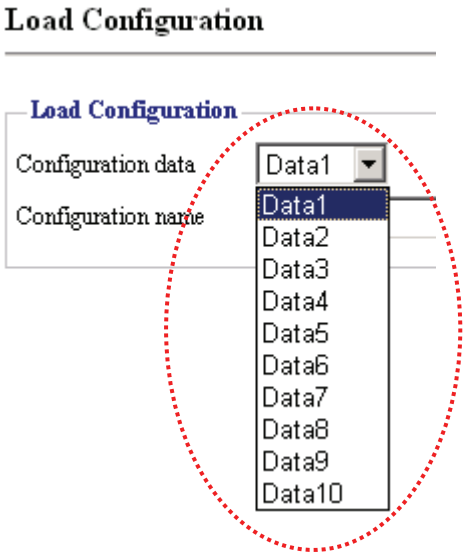
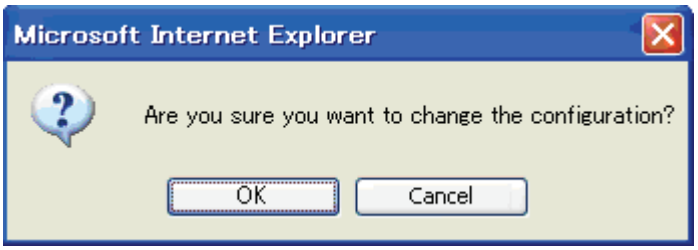


Figure 3-4 Selecting Configuration Data

Assign the selected data a name using up to 16 alphanumeric characters in the Configuration name field, and then click the SELECT button. The dialog box shown below appears. Click the OK button to change the registration number of the configuration data.

*) Reboot is required only when the operation mode is changed between encoder and decoder after loading configuration.



Confirm that the configuration data number in the upper right red zone on the Basic setting window has been changed to the previously selected number.

Next, update the parameters listed in **Table 3-1 Parameters Preprogrammed in Configuration Data** using the following respective windows, and then click the OK button or APPLY to update and register the configuration data.

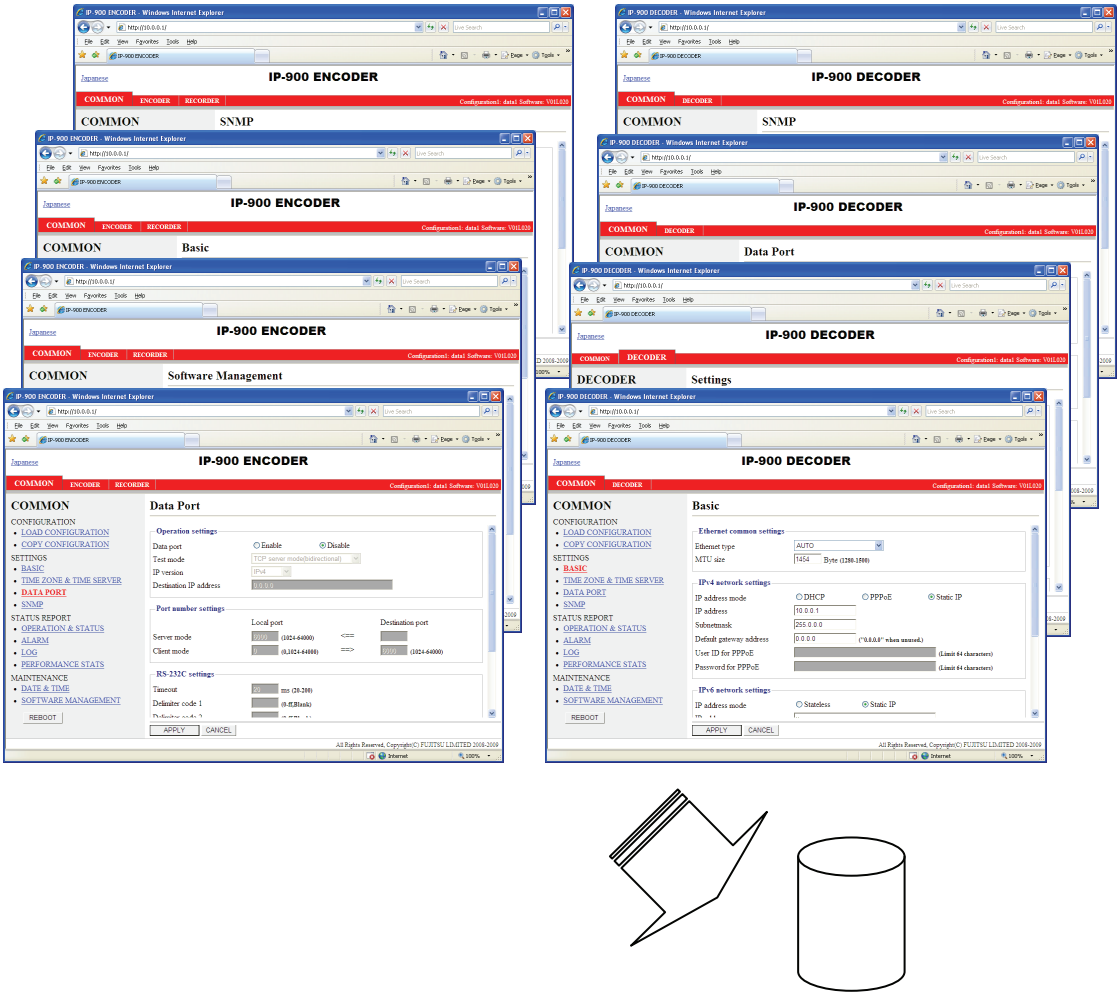


Figure 3-5 Parameters, of which 10 Sets are Handled as Independent Configuration Data

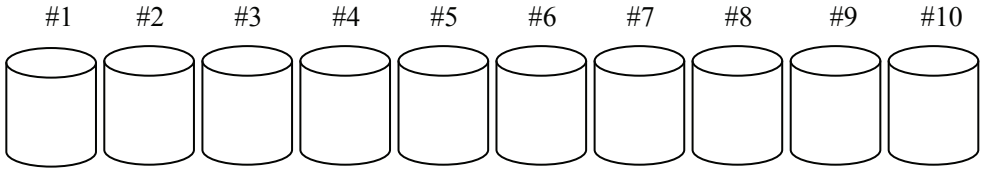


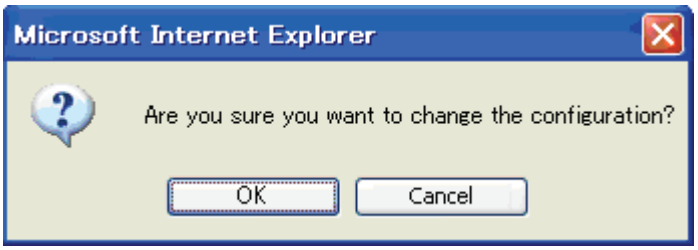
Figure 3-6 Configuration Data (10 independent sets)

◆Using configuration data

Select (from 1 to 10) the data number you want to use from the configuration data field by referring to the corresponding name in the Configuration name field.

Click the SELECT button. When the following dialog box appears, click the OK button. IP-900 series updates the configuration data registration number.

*) Reboot is required only when the operation mode is changed between encoder and decoder after loading configuration.



Confirm that the configuration data number in the upper right red zone on the Basic setting window has been changed to the previously selected number.

Table 3-2 Configuration Data Selection Items

	Item	Description	Parameter
Load configuration	Configuration data	<When updating or registering> Ten types of configuration data registered in advance can be switched, updated and registered each. <When using> Ten types of configuration data registered in advance can be switched data.	- Data numbers 1 to 10
	Configuration name	<When updating or registering > A configuration name can be assigned to each type of configuration data. <When using> An assigned configuration name can be used for switching configuration data.	- Any name (using 16 alphanumeric characters)

3.2.3 Copying Configuration Data

For the configuration data of which there are a maximum of ten types that is used in "LOAD CONFIGURATION" copying is performed between sets of configuration data. Copying can be done when making settings for other configuration data, by using parameters for configuration data that are already registered.

For example, copying can be used conveniently in cases when, for configuration data that is already registered, you want to create configuration data with changed resolutions and bit rates.

Click COPY CONFIGURATION in the left frame of the Web screen to display the Copy Configuration window in the right frame. Make the required settings by referring to **Table 3-3 Copy Configuration Setting Items**.

Figure 3-7 Copy Configuration Window

After the completion of the settings, click the COPY button. The message below appears.

Click OK to apply the settings.

Table 3-3 Copy Configuration Setting Items

	Item	Description	Parameter
Select source configuration	Configuration data	Select one of the ten types of configuration data that have already been registered to copy the data.	• Data numbers 1 to 10
Copy to	Configuration data 1~10	Select the configuration data to which you want to make the copy. It is possible to select multiple configuration data as copy destinations, but the source configuration and the configuration data that is currently in use cannot be selected.	• Radio buttons
	Configuration name	A configuration name can be assigned to each type of configuration data.	• Any name (using 16 alphanumeric characters)

3.2.4 Basic

*** Basic comprises a group of setting items, of which 10 sets can be registered independently by selecting data numbers as in 3.2.1 Configuration Data.**

You can set or change the settings of the parameters related to the network connection of IP-900 series or the operation mode in which it should operate after power-on. Make the required settings by referring to **Table 3-4 Basic Setting Items**.

IMPORTANT

If you operate IP-900 series with the default IP address, disconnect it from your network. Connect it to the setting terminal via a hub or directly through a UTP cable. From the setting terminal, set it up to meet the requirements for your network and then connect it to the network. If you connect it to your network with the default IP address, an unexpected fault may occur in your network.

Figure 3-8 Basic Information Window

After the completion of the settings, click APPLY button. The message below appears.

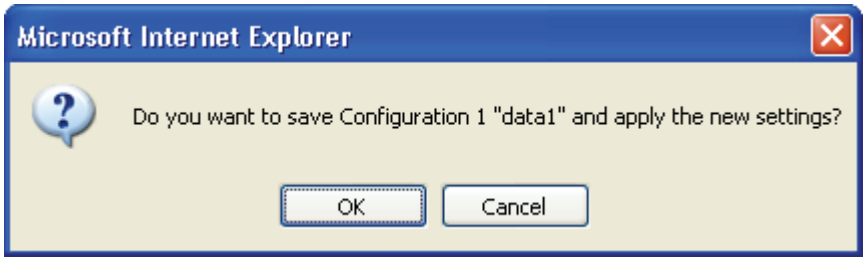


Table 3-4 Basic Setting Items

	Item	Description	Parameter
Ethernet common settings	Ethernet type	Select the LAN interface operation mode.	- AUTO (default) - 100Base-TX Full - 100Base-TX Half - 10Base-T Full - 10Base-T Half
	MTU size	Specify in bytes the maximum size of IP packets to be sent to the LAN.	1280 to 1500 bytes (Default: 1454) * For PPPoE, specify 1454 (recommended).
IPv4 network settings	IP address mode	Specify the IPv4 address acquisition method	- DHCP - PPPoE - Static IP (Default)
	IP address	Specify the IPv4 address when "Static IP" is set for [IP address mode].	IPv4 address other than the following: 224.0.0.0 to 239.255.255.255 (Class D) 240.0.0.0 to 255.255.255.255 (Class E) 0.0.0.0, 127.0.0.0 to 127.255.255.255 (Default: 10.0.0.1)
	Subnetmask	Specify the IPv4 subnet mask when "Static IP" is set for [IP address mode].	Subnet mask other than the following: 255.255.255.254, 255.255.255.255 (Default: 255.0.0.0)
	Default Gateway address	Specify the default gateway address of IPv4 when "Static IP" is set for [IP address mode].	IPv4 address other than the following: 224.0.0.0 to 239.255.255.255 (Class D) 240.0.0.0 to 255.255.255.255 (Class E) 127.0.0.0 to 127.255.255.255 (Default: None (represented as 0.0.0.0))
	User ID for PPPoE	Specify the user ID when "PPPoE" is set for [IP address mode].	64 en-size alphanumeric characters (Default: Blank)

	Item	Description	Parameter
	Password for PPPoE	Specify the password when "PPPoE" is set for [IP address mode].	64 en-size alphanumeric characters (Default: Blank)
IPv6 network settings	IP address mode	Specify the IPv6 address acquisition method.	- Stateless - Static IP (default)
	IP address	Specify the IPv6 address when "Static IP" is set for [IP address mode].	Global unicast IP address 2xxx:xxxx:…:xxxx to 3xxx:xxxx:…:xxxx (Default: ::)
	Prefix	Specify the prefix of the IPv6 address when "Static IP" is set for [IP address mode].	3 to 128 (Default: 64)
	Default gateway address	Specify the default gateway address when "Static IP" is set for [IP address mode].	Global unicast address 2xxx:xxxx:...:xxxx to 3xxx:xxxx:...:xxxx (Default: ::)
Other settings	User authentication	Specify whether to enable user authentication for accessing the Web screen.	- Enable - Disable (Default)
	User ID	Specify the user name for authentication.	16 en-size alphanumeric characters (Default: Blank)
	Password	Specify the password for authentication.	16 en-size alphanumeric characters (Default: Blank)
	WEB server title	Specify the character string to be displayed on the title bar of the Web screen. It will be used to identify the Web screen with the equipment name.	The specified string must be not exceed 64 bytes (assuming one double-space character as 2 bytes and one single-space character as 1 byte). (Default: blank) * Single-space kana characters are handled as double-space characters.

Note: If power-on is performed in combination with the Cancel key (see IP-900 series User's Guide), the IP address and subnet mask on both LAN and CONSOLE ports are temporarily reset to the defaults (LAN IPv4 address 10.0.0.1, subnet mask 255.0.0.0, IPv6 address :: and prefix: 64). If it becomes unclear what an IP address is, connect the equipment with the defaults and use the setup menu to confirm the IP address and subnet mask. In this case, the password restriction is also disabled. Hold down the MNT button until the RDY LED starts blinking in orange. The equipment reboots, and the IP address and subnet mask that were set for the equipment are restored.

3.2.5 Time Zone & Time Server

*** Time Zone & Time Server is a group of setting items, of which 10 sets can be registered independently by selecting data numbers as in 3.2.1 Configuration Data.**

Set the time zone and time server at the location where IP-900 series is installed. Click TIME ZONE & TIME SERVER in the left frame of the Web screen. The Time Zone & Time Server window appears in the right frame. Make settings according to the operation mode by referring to **Table 3-5 Time Zone Setting Item** and **Table 3.6 Time Server Setting Items.**

Figure 3-9 Time Zone & Time Server Window

After the completion of the settings, click APPLY button. The message below appears. Click OK to apply the settings. *Reboot is not required.

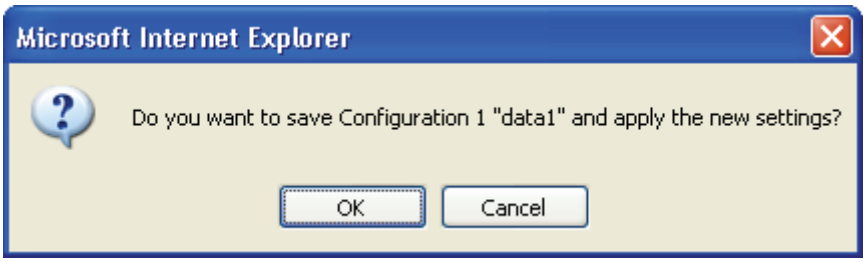


Table 3-5 Time Zone Setting Item

Item	Description	Parameter
Time zone	Select the time zone at the IP-900 series installation site.	(Default: Asia/Tokyo)
UTC offset	Specify the time difference from Coordinated Universal Time (UTC) when "UTC offset" is selected for [Time zone].	(Default: 0 Hours)

Table 3-6 Time Server Setting Items

Item	Description	Parameter
Auto synchronization	Specify whether to automatically synchronize with the time server.	- Disable (Default) - Enable
Synchronization interval	Specify in minutes the interval in which synchronization with the time server is performed.	1 to 65535 minutes (Default: 45)
IP version	Set the IP address version.	- IPv4 (Default) - IPv6
Server IP address	Set the IP address of the time server.	Other than 0.0.0.0 (Default: 0.0.0.0) * You cannot specify a multicast address.

3.2.6 Data Port

*** Data Port is a group of setting items, of which 10 sets can be registered independently by selecting data number as in 3.2.1 Configuration Data.**

This setup is performed to enable data communication with another device on the IP network by connecting the external device through the RS-232C port (D-sub 9-pin) provided at the rear of IP-900 series.

Click DATA PORT in the left frame of the Web screen. The Data Port window appears in the right frame, where you can set parameters for data communication with another device via the IP network. Make the required settings by referring to **Table 3-7 Data Port Setting Items** and **Table 3-8 Operations Modes**

Figure 3-10 Data Port Window

After the completion of the settings, click the APPLY button. The message below appears. Click OK to apply the settings. *Reboot is not required.

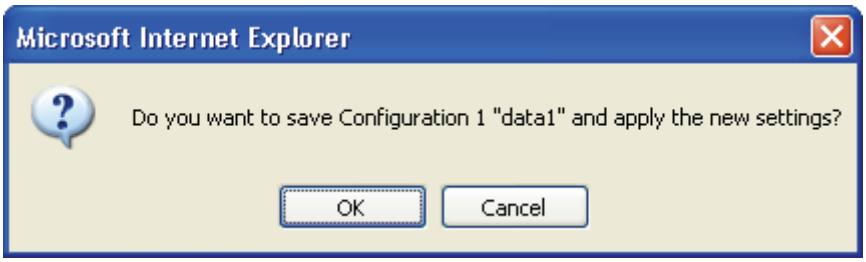


Table 3-7 Data Port Setting Items

	Item	Description	Parameter
Operation settings	Data port	Specify whether to use data port communication.	- Enable - Disable (Default)
	Operation mode	Specify the operation mode of data port communication.	- TCP server mode (bidirectional) (Default) - TCP server mode (receiving only) - TCP client mode (bidirectional)
	IP version	Set the IP address version	- IPv4 (Default) - IPv6
	Destination IP address	Specify the IP address of the data communication destination when "TCP client mode (bidirectional)" is set for [Test mode].	- IPv4 (Default) - IPv6
		Specify the IP address of the data communication destination when "TCP client mode (bidirectional)" is set for [Test mode].	Other than 0.0.0.0 (Default: 0.0.0.0)
Port number settings	Server mode	Specify the port number of the own device when "TCP server mode (bidirectional)" is set for [Test mode].	1024 to 64000 (Default: 6000)
	Client mode	Specify the port number of the own device when "TCP client mode (bidirectional)" is set for [Test mode].	0 or 1024 to 64000 (Default: 0) * If o is specified, a port number from 1024 to 4096 is automatically selected.
		Specify the port number of the destination device when "TCP client mode (bidirectional)" is set for [Test mode].	1024 to 64000 (Default: 6000)
RS-232C settings	Timeout	Specify in milliseconds the reception timeout time for RS-232C.	20 to 200ms (Default: 20) * The duration to detect a time-out is defined as "the set value rounded down by a multiple of '20[ms]'" + "RS-232C polling interval of the device (20[ms])". ex) When '60' is set, the duration will be '60' + '20' = 80 [ms] When '50' is set, the duration will be '40' + '20' = 60 [ms]

	Item	Description	Parameter
	Delimiter code 1	Specify the delimiter code 1 for RS-232C.	Blank or hexadecimal number between 00 and ff (Default: Blank) * A blank field means that no value is specified.
	Delimiter code 2	Specify the delimiter code 2 for RS-232C.	Blank or hexadecimal number between 00 and ff (Default: Blank) * A blank field means that no value is specified.
	Baud rate	Specify the RS-232C communication speed.	1200/2400/4800/9600 (Default) /19200/38400 bps
	Bit length	Specify the RS-232C character size.	7 bits or 8 bits (Default)
	Parity	Specify whether to use RS-232C parity.	None (Default), Odd or Even
	Stop bits	Specify the length of RS-232C stop bits.	1 bit (Default) or 2 bits
	Flow control	Specify whether to set RS-232C flow control.	None (Default), RS or CS

Table 3-8 Operation Modes

	Operation mode	Description
(1)	TCP server mode (bidirectional)	Bidirectional data communication is performed between the data port and another device connected via the IP network. IP-900 series waits, at the specified port number, for access through socket connection from the destination device. (IP address setting is not required.)
(2)	TCP server mode (receiving only)	Data received from another device connected via the IP network is output to the data port. Data received from the data port is not sent to the destination. IP-900 series waits, at the specified port number, for access through socket connection from the destination device. (IP address setting is not required.)
(3)	TCP client mode (bidirectional)	Bidirectional data communication is performed between the data port and another device connected via the IP network. IP-900 series sets up a socket connection through the specified port to the device with the specified IP address.

* The following combinations of modes are available for data communication between IP-900 series:

(1) <-> (3)

(2) <-> (3)

3.2.7 SNMP

*** SNMP is a group of setting items, of which 10 sets can be registered independently by selecting data numbers as in 3.2.1 Configuration Data.**

Click SNMP in the left frame of the Web screen. The SNMP window appears in the right frame, where you can set parameters for SNMP with the counterpart device via the IP network. Make the required settings by referring to **Table 3-9 SNMP Setting Items**.

Figure 3-11 SNMP Window

After the completion of the settings, click the APPLY button. The message below appears. Click OK to apply the settings. * Reboot is not required.

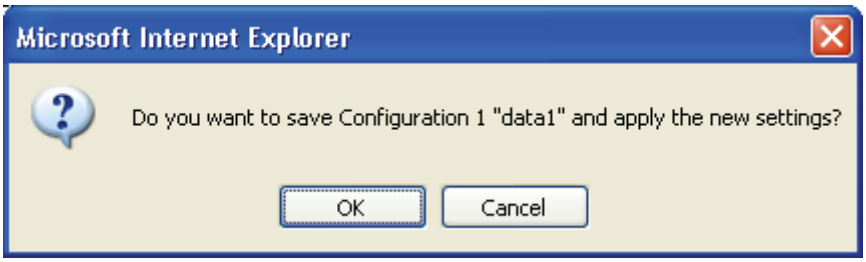


Table 3-9 SNMP Setting Items

Item		Description	Parameter
SNMP Agent		Specify whether to enable SNMP agent.	- Disable (Default) - Enable
Manager #N	SNMP version	Specify the SNMP version of SNMP manager.	- SNMPv1 (Default) - SNMPv2c
	Community name	Specify the community name to accept the SNMP request from the SNMP manager.	Alphanumeric 16 characters (Default: Blank)
	IP version	Specify the IP version of the IP address of SNMP manager.	- IPv4 (Default) - IPv6
	IP address	Specify the IP address of SNMP manager. (Max. 10 managers can be registered.)	An IP address other than 0.0.0.0 (Default: Blank) * A blank field means that no value is specified. * You cannot specify a multicast address.

3.2.8 Operation & Status (Common)

Click OPERATION & STWATUS in the left frame of the Web screen. The Operation & Status window appears in the right frame, where you can check the status of equipment operation such as the state of LAN operation. For details, see **Table 3-10 Operation & Status Display Items**.

Selecting {3 sec, 5sec, or 10sec} from [Auto update] enables automatic updating of the performance data in specified time intervals. Selecting {none} from [Auto update] disables automatic updating.

Figure 3-12 Operation & Status Window

Table 3-10 Operation & Status Display Items

Item	Display
Serial number	Displays the serial number
IP address (IPv4)	**{DHCP/PPPoE/Static IP}** Displays the IPv4 address acquisition mode.
	[xxx.xxx.xxx.xxx (IPv4)] Displays the IPv4 address. xxx.xxx.xxx.xxx: IPv4 address
Subnetmask (IPv4)	**xxx.xxx.xxx.xxx** Displays the IPv4 subnet mask. xxx.xxx.xxx.xxx: Subnet mask
Default gateway address (IPv4)	**xxx.xxx.xxx.xxx** Displays the default gateway address of IPv4. xxx.xxx.xxx.xxx: Default gateway address
IP address (IPv6)	Link-Local/[xxxx:xxxx: ... :xxxx(IPv6)] Displays the IPv6 link-local address. xxxx:xxxx: ... :xxxx: Link-Local address
	{Stateless/Static IP} Displays the IPv6 address acquisition method. * If the IPv6 address acquisition method is "Stateless," up to four sets of global unicast address/prefix are displayed according to the address acquisition status.
	[yyyy:yyyy: ... :(IPv6)] Displays the IPv6 global unicast address. yyyy:yyyy: ... :yyyy: Global unicast address
	[zzz] Displays the prefix of the IPv6 global unicast address. zzz: Prefix
Default gateway address (IPv6)	**xxxx:xxxx: ... :xxxx** Displays the default gateway address of IPv6. xxx:xxx. ... :xxx: Default gateway address * If the IPv6 address acquisition method is "Stateless," up to four default gateway addresses are displayed according to the address acquisition status.
LAN MAC address	Displays the MAC address.
LAN link	**{Connected / Disconnected}** Displays the LINK status.
	{100Base-TX Full Duplex / 100Base-TX Half Duplex / 10Base-T Full Duplex / 10Base-T Half Duplex} Displays the LAN interface operation status.
Time server	**{Normal / Fault / Synchronization failure/ ---}** Displays the status of synchronization with the specified time server.

Item	Display
Data port	**{Normal/Fault/---}** Displays the communication status of data port communication.**{TCP server mode (bidirectional)/TCP server mode (receiving only)/TCP client mode (bidirectional)}** Displays the operation mode of data port communication.
	{IP address} Displays the IP address of the destination device for data port communication. - TCP server mode / TCP server mode (receiving only) Displays the IP address of the destination device when data port communication is established. (Displays 0.0.0.0 when no communication is set up.) - TCP client mode Displays the IP address of the destination device for data port communication.
	{Port number} Displays the port number of the destination device for data port communication. - TCP server mode / TCP server mode (receiving only) Displays the port number of the destination device when data port communication is established. - TCP client mode Displays the port number of the destination device for data port communication.
SNMP	**{Normal / ---}** Display the status of the SNMP agent.
Component temperature	Displays the internal temperature (ºC) of the equipment.

* Notation: {A/B} indicates that either A or B is displayed.

3.2.9 Alarm

Click ALARM in the left frame of the Web screen. The Alarm window appears in the right frame, where you can check the alarm list. For details, see **Table 3-11 Alarm List**.

Selecting {3 sec, 5sec, or 10sec} from [Auto update] enables automatic updating of the performance data in specified time intervals. Selecting {none} from [Auto update] disables automatic updating.

Figure 3-13 Alarm Window

Table 3-11 Alarm List

Code	Name	Description	Details (The part after the * mark is not displayed.)
I001	SDI input down	HD/SD-SDI input signal not detected	−
I002	HDMI input down	HDMI input signal not detected	−
I003	Analog input down	Analog video input signal not detected	−
I011	Video synchronization error	Video input synchronization failure	−
I021	Input data error (*7)	Count-up occurred in the performance statistics error counter	#xxxxxxxxxxxxxxxx * 64-bit hexadecimal number. For the meaning of each bit, see Table 3-12, "Bit Formats for Input Data Errors."
E001	Power error (*1)	Power failure occurred	#1 * Power failure on CNT board #2 * Power failure on COD board
E003	Temperature error occurrence (*5)	Extreme temperature (shutdown processing started)	#1 TEMP1=t1 TEMP2=t2 FAN=xxxRPS #2 TEMP1=t1 TEMP2=t2 FAN=xxxRPS * Details are as follows: #1/#2: Number of the temperature sensor that has detected a temperature error t1: Temperature indicated by temperature sensor 1 t2: Temperature indicated by temperature sensor 2 xxx: FAN rotational speed
E004	Flash ROM error (*1)	Internal flash ROM access error occurred	/dev/mtd0 to 15 * Displays the occurrence range of access error.
E00A	Flash ROM check sum error (*1)	Operation data error detected in internal Flash ROM	software bundle software configuration configuration#1〜#10 option * Displays the occurrence range of check sum errors.
E010	FAN error (*2)	FAN error (low speed) or stopped	xxxRPS * xxx: FAN rotational speed

Code	Name	Description	Details (The part after the * mark is not displayed.)
E013	Temperature warning (*2)	Thermal alarm (alarm only) detected	#1 TEMP1=t1 TEMP2=t2 FAN=xxxRPS #2 TEMP1=t1 TEMP2=t2 FAN=xxxRPS * Details are as follows: #1/#2: Number of the temperature sensor that has detected a temperature error t1: Temperature indicated by temperature sensor 1 t2: Temperature indicated by temperature sensor 2 xxx: FAN rotational speed
E082	CODEC1 error (*4)	Main CODEC LSI error detected	−
E083	CODEC2 error (*4)	Sub CODEC LSI error detected	−
E084	CF card access error (*3)	CF card access failure detected	−
E085	CF card power error (*3)	Overcurrent to CF card detected	−
E08B	SUB CPU1 error (*4)	SUB CPU1 error detected	−
E08C	SUB CPU2 error (*4)	SUB CPU2 error detected	−
E08E	Clock error (*1)	Clock error or interruption detected	#1 to #4 * Indicates the location where a clock error has occurred.
E08F	Memory error (*1)	SDRAM memory check error detected	#1 to #7 * Indicates the location where a memory error has occurred.
E093	Sending buffer overflow (*6)	Sending buffer overflow occurred	#1, #2 * Indicates the location where a sending buffer overflow has occurred.

If an alarm recovers occurs after an alarm occurrence.

*1: After occurrence of this error, the ALM LED remains on. The device needs to be rebooted to turn off the ALM LED.
*2: The ALM LED blinks while this alarm is active. The LED goes off when the alarm cause is recovered.
*3: After occurrence of this error, the ALM LED remains to blink.
*4: After occurrence of this error, the operation is retired for recovery. If the retry for recovery is unsuccessful, the ALM LED remains on. The device needs to be rebooted to turn off the ALM LED.
*5: If an extreme temperature is detected, all LEDs except LINK/ACT, 10/100 go on. The device needs to be rebooted to turn off the LEDs.
*6: The ALM LED blinks while this alarm is active. The LED goes off when the alarm cause is recovered.
In case that the settings exceeds the capacity of the IP network, please reconfigure them to meet the network requirement
*7: The IN DWN LED blinks while this alarm is active. The LED goes off 10 seconds after the error cause is recovered. See 3. 2. 11 Performance Statistics for the details of the statistical information counter about the alarm occurrence.

Table 3-12 Input data error bit format

Bit	63	62	61	60	59 - 0
Type	Decoder				Undefined
Interface	IP	IP	IP	IP	Undefined
Performance statistics	Number of reloading TS stream	Number of discontinuous PCR	Number of video decoding errors	Number of audio decoding errors	

3.2.10 Log

Click LOG in the left frame of the Web screen. The Log window appears in the right frame, where you can check the alarm log. For details, see **Table 3-13 Log Type**.

If you click the DELETE ALL LOGS button, the alarm log is detected completely.

* Up to 100 log items per page can be saved to up to 10 pages (1,000 log items in total). Log items exceeding 1,000 items are overwritten beginning with the chronologically oldest items.

Figure 3-14 Log Window

Table 3-13 Log Type

Code	Name	Description	Details (The part after the * mark is not displayed.)
0001	Boot (Power ON)	Normal start using the switch	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0002	Boot (Reset)	Normal start by reboot	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0004	Boot (Initial maintenance)	Normal start using the factory-shipped firmware	–
0005	Boot (Maintenance)	Normal start in maintenance mode	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0006	Software update	Software update	VxxLxxxCxx -> VyyLyyyCyy * Displays the new and old software versions. VxxLxxxCxx: Old software version VyyLyyyCyy: New software version
0007	Boot (Restart) (*6)	Restarted owing to CPU failure	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0008	Boot (Others) (*6)	Restarted owing to software failure	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0009	Shutdown	Shut down by MNT button	–
000A	RTC initialization	RTC battery backup failure	–
000B	CF card initialization	CF card format error	–
000C	Configuration update	Operation data update	–
000D	Basic settings change	Change basic setting	–

Code	Name	Description	Details (The part after the * mark is not displayed.)
000E	Configuration data switching	Switch configuration data	xxxx -> yyyy * Displays the old and new configuration names. xxxx: Old configuration name yyyy: New configuration name
000F	Operation data initialization	Operation data initialized	−
0010	Option update	Option installed	HD
L001	LINK error (LAN)	Link disconnection at a LAN port occurred	−
*L001	Link alarm recovery	Recovered from link disconnection at a LAN port	10BaseT_HD/10BaseT_FD/100BaseTX_HD/100Base TX_FD * Displays the operating status of the LAN interface
L006	Time server synchronization failure	Time synchronization with the time server failed	−
*L006	Time server synchronization	Time acquisition from the time server was successful	−
L009	DHCP connection failure	DHCP server is disconnected	−
*L009	DHCP connection	Connected to the DHCP server	xxx.xxx.xxx.xxx/yy,zzz.zzz.zzz.zzz * Displays the IPv4 address acquired from the DHCP server. xxx.xxx.xxx.xxx: IPv4 address yy: Subnet mask bit count zzz.zzz.zzz.zzz: Gateway address
L00A	PPPoE connection failure	PPPoE server is disconnected	−
*L00A	PPPoE connection	Connected to the PPPoE server	xxx.xxx.xxx.xxx/yy,zzz.zzz.zzz.zzz * Displays the IPv4 address acquired from the PPPoE server. xxx.xxx.xxx.xxx: IPv4 address yy: Subnet mask bit count zzz.zzz.zzz.zzz: Gateway address

Code	Name	Description	Details (The part after the * mark is not displayed.)
L00E	DHCP connection update	IP address change occurred during DHCP connection	xxx.xxx.xxx.xx1/y1,zzz.zzz.zzz.zz1 -> xxx.xxx.xxx.xx2/y2,zzz.zzz.zzz.zz2 * Displays the old and new IPv4 addresses acquired from the DHCP server. xxx.xxx.xxx.xx1: Old IPv4 address y1: Old subnet mask bit count zzz.zzz.zzz.zz1: Old gateway address xxx.xxx.xxx.xx2: New IPv4 address y2: New subnet mask bit count zzz.zzz.zzz.zz2: New gateway address
L00F	PPPoE connection update	IP address change occurred during PPPoE connection	xxx.xxx.xxx.xx1/y1,zzz.zzz.zzz.zz1 -> xxx.xxx.xxx.xx2/y2,zzz.zzz.zzz.zz2 * Displays the old and new IPv4 addresses acquired from the PPPoE server. xxx.xxx.xxx.xx1: Old IPv4 address y1: Old subnet mask bit count zzz.zzz.zzz.zz1: Old gateway address xxx.xxx.xxx.xx2: New IPv4 address y2: New subnet mask bit count zzz.zzz.zzz.zz2: New gateway address
L010	Stateless address acquisition failure	IPv6 stateless address acquisition failed	
*L010	Stateless address acquisition	IPv6 stateless address acquired	xxxx:xxxx:…:xxxx/yy * Displays the IPv6 address acquired from the router. xxxx:xxxx: … :xxxx: IPv6 address yy: Subnet prefix length
L011	Stateless address update	IPv6 stateless address update occurred	xxxx:xxxx:…:xxx1/y1 -> xxxx:xxxx:…:xxx2/y2 * Displays the old and new IPv6 addresses acquired from the router. xxxx:xxxx: … :xxx1: Old IPv6 address y1: Old subnet prefix length xxxx:xxxx: … :xxx2: New IPv6 address y2: New subnet prefix length
I001	SDI input down	HD/SD-SDI input signal not detected	—
*I001	SDI input down recovery	Normal HD/SD-SDI input	—

Code	Name	Description	Details (The part after the * mark is not displayed.)
I002	HDMI input down	HDMI input signal not detected	−
*I002	HDMI input down recovery	Normal HDMI input	−
I003	Analog input down	Analog video input signal not detected	
*I003	Analog input down recovery	Normal analog video input	
I011	Video input synchronization error	Video input PLL synchronization error occurred	−
*I011	Video input synchronization error recovery	Recovered from video input PLL synchronization error	−
I021	Input data error (*8)	Count-up occurred in the performance statistics error counter	#xxxxxxxxxxxxxxxx * 64-bit hexadecimal number. For the meaning of each bit, see Table 3-12, "Input data error bit format".
*I021	Input data error recovery (*8)	Recovered from count-up of the performance statistics error counter	−
E001	Power error (*1)	Power failure occurred	#1 * Power failure on CNT board #2 * Power failure on COD board
E003	Temperature error occurrence (*5)	Extreme temperature (shutdown processing started)	* Details are as follows: #1/#2: Number of the temperature sensor that has detected a temperature error t1: Temperature indicated by temperature sensor 1 t2: Temperature indicated by temperature sensor 2 xxx: FAN rotational speed
E004	Flash ROM error (*1)	Internal flash ROM access error occurred	/dev/mtd0 to 15 * Displays the occurrence range of access error.
E00A	Flash ROM check sum error (*1)	Operation data error detected in internal Flash ROM	Software bundle software configuration configuration#1〜#10 * Displays the occurrence range of check sum errors.
E010	FAN error (*2)	FAN error (low speed) or stopped	xxxRPS * xxx: FAN rotational speed
*E010	FAN error recovery (*2)	FAN speed recovery	xxxRPS * xxx: FAN rotational speed

Code	Name	Description	Details (The part after the * mark is not displayed.)
E013	Temperature warning (*2)	Thermal alarm (alarm only) detected	#1 TEMP1=t1 TEMP2=t2 FAN=xxxRPS #2 TEMP1=t1 TEMP2=t2 FAN=xxxRPS * Details are as follows: #1/#2: Number of the temperature sensor that has detected a thermal alarm t1: Temperature indicated by temperature sensor 1 t2: Temperature indicated by temperature sensor 2 xxx: FAN rotational speed
*E013	Thermal alarm recovery (*2)	Recovered from thermal alarm	#1 TEMP1=t1 TEMP2=t2 FAN=xxxRPS #2 TEMP1=t1 TEMP2=t2 FAN=xxxRPS * Details are as follows: #1/#2 : Number of the temperature sensor that has detected a thermal alarm recovery t1: Temperature indicated by temperature sensor 1 t2: Temperature indicated by temperature sensor 2 xxx: FAN rotational speed
E082	CODEC1 error (*4)	Main HD CODEC LSI error detected	–
*E082	CODEC1 error recovery (*4)	Recovered from main CODEC LSI error	–
E083	CODEC2 error (*4)	Sub CODEC LSI error detected	–
*E083	CODEC2 error recovery (*4)	Recovered from sub CODEC LSI error	–
E084	CF card access error (*3)	CF card access failure detected	–
E085	CF card power error (*3)	Overcurrent to CF card detected	–
E08B	SUB CPU1 error (*4)	SUB CPU1 error detected	–
*E08B	SUB CPU1 error recovery (*4)	Recovered from SUB CPU1 error	–
E08C	SUB CPU2 error (*4)	SUB CPU2 error detected	–
*E08C	SUB CPU2 error recovery (*4)	Recovered from SUB CPU2 error	–
E08E	Clock error (*1)	Clock error or interruption detected	#1 to #4 * Indicates the location where a clock error has occurred.
E08F	Memory error (*1)	SDRAM memory check error detected	#1 to #7 * Indicates the location where a memory error has occurred.
E093	Sending buffer overflow (*7)	Sending buffer overflow occurred	#1, #2 * Indicates the location where a sending buffer overflow has occurred.

Code	Name	Description	Details (The part after the * mark is not displayed.)
*E093	Sending buffer overflow recovery (*7)	Recovered from sending buffer overflow	#1, #2 * Indicates the location of sending buffer overflow recovery.

*1: After occurrence of this error, the ALM LED remains on. The device needs to be rebooted to turn off the ALM LED.
*2: The ALM LED blinks while this alarm is active. The LED goes off when the alarm cause is recovered.
*3: After occurrence of this error, the ALM LED remains to blink.
*4: After occurrence of this error, the operation is retried for recovery. If the retry for recovery is unsuccessful, the ALM LED remains on. The device needs to be rebooted to turn off the ALM LED.
*5: If an extreme temperature is detected, all LEDs except LINK/ACT, 10/100 go on. The device needs to be rebooted to turn off the LEDs.
*6: The ALM LED is on while this alarm is active. The LED goes off when the error cause is recovered.
*7: The ALM LED blinks while this alarm is active. The LED goes off when the alarm cause is recovered.
In case that the settings exceeds the capacity of the IP network, please reconfigure them to meet the network requirement.
*8: The IN DWN LED blinks while this alarm is active. The LED goes off 10 seconds after the error cause is recovered. See 3. 2. 11 Performance Statistics for the details of the statistical information counter about the alarm occurrence.

⚠ CAUTION

If an alarm occurs, the Fujitsu maintenance engineer may ask you to collect not only alarm log information but also detailed log information about the inside of the device. Save the detailed log information to a personal computer by clicking the [GET LOG] button, and then hand it over to the maintenance engineer.

3.2.11 Performance Statistics

Click PERFORMANCE STATS in the left frame of the Web screen. The Performance Statistics window appears in the right frame. Select the port from {Main Encoder (Ethernet), Sub Encoder, Decoder (Ethernet) or Data Port } and the interval from {All, Hour, Day, Week or Month} and then click to check the various types of performance data shown in **Table 3-14 Performance Statistics Items**.

Selecting {3sec, 5sec, or 10sec} from [Auto update] enables automatic updating of the performance data in specified time intervals. Selecting {none} from [Auto update] disables automatic updating.

Clicking the DELETE ALL PERFORMANCE DATA button deletes all performance data.

Figure 3-15 Performance Statistics Window Main Encoder

Figure 3-16 Performance Statistics Window Sub-encoder

Figure 3-17 Performance Statistics Window Decoder

Figure 3-18 Performance Statistics Window Data Port

Table 3-14 Performance Statistics Items

Port	Item	Description	Display
Main Encoder (Ethernet)	Number of data packets sent	Displays the number of audio and video data packets sent.	**{-----}** The counter restarts counting from 0 after it expires.
	Number of FEC packets sent	Displays the number of FEC/Pro-MPEG FEC packets sent.	**{-----}** The counter restarts counting from 0 after it expires.
	Number of ARQ request received	Displays the number of ARQ requests received.	**{-----}** The counter restarts counting from 0 after it expires.
* Displayed only for encoder	Number of ARQ packets resent	Displays the number of ARQ packets resent.	**{-----}** The counter restarts counting from 0 after it expires.
Sub Encoder	Number of data packets sent	Displays the number of audio and video data packets sent.	**{-----}** The counter restarts counting from 0 after it expires.
	Number of FEC packets sent	Displays the number of FEC/Pro-MPEG FEC packets sent.	**{-----}** The counter restarts counting from 0 after it expires.
* Displayed only for encoder	Number of ARQ request received	Displays the number of ARQ requests received.	**{-----}** The counter restarts counting from 0 after it expires.
	Number of ARQ packets resent	Displays the number of ARQ packets resent.	**{-----}** The counter restarts counting from 0 after it expires.
Decoder (Ethernet)	Number of data packets received	Displays the number of audio and video data packets received.	**{-----}** The counter restarts counting from 0 after it expires.
	Number of data packets recovered	Displays the number of media packets recovered by the FEC/Pro-MPEG FEC/ARQ error correction function.	**{-----}** The counter restarts counting from 0 after it expires.
	Number of data packets lost	Displays the number of data packets that were abandoned on the network and could not be received.	**{-----}** The counter restarts counting from 0 after it expires.
	Number of FEC packets received	Displays the number of FEC/Pro-MPEG FEC packets sent.	**{-----}** The counter restarts counting from 0 after it expires.
	Number of ARQ packets received	Displays the number of data packets received by ARQ.	**{-----}** The counter restarts counting from 0 after it expires.
* Displayed only for decoder	Number of data packets recovered by FEC	Displays the number of packets recovered with the FEC/Pro-MPEG FEC method.	**{-----}** The counter restarts counting from 0 after it expires.
	Number of ARQ request sent	Displays the number of ARQ request packets sent when a packet was lost.	**{-----}** The counter restarts counting from 0 after it expires.
	Number of data packets recovered by ARQ	Displays the number of data packets recovered by ARQ.	**{-----}** The counter restarts counting from 0 after it expires.
	Number of data loss exceeding concealment time	3.5.1 Setting (Decoder) Displays the number of displaying “blue” or “gray” image not receiving data for longer time than the setting value of [Packet non-receiving recognition time].	**{-----}** The counter restarts counting from 0 after it expires.

Port	Item	Description	Display
	Number of reloading TS stream	Displays the number of reloading TS stream without packets recovery because of many packets lost. *In the following situation, the number is counted. 3.5.1 Setting (Decoder) - [ARQ operation] is performed. - When the number of data packets lost is 4000 or more - [ARQ operation] is not performed. - When the number of data packets lost is 24 packets or more.	{-----} The counter restarts counting from 0 after it expires.
	Number of discontinuous PCR (*1)	Displays the number of discontinuous PCR values detected during decoding.	{-----} The counter restarts counting from 0 after it expires.
	Number of jitter control buffer exceeded capacity	Displays the number of video skip or repeat that occurs when the decoder cannot absorb the network jitter of the reception packets *) It can be lowerd by increasing "Jitter control buffer" in "3.5.1 Setting (Decoder)". *) Its counter may increase even if there is no network jitter when the decoder receives the stream which video resolution is set to 352x288 or lower in "3.3.1 Setting (Encoder)", or which is generated by Fujitsu IP-700II.	{-----} The counter restarts counting from 0 after it expires.
	Number of video decoding errors (*1)	Displays the number of video decoding errors detected during decoding.	{-----} The counter restarts counting from 0 after it expires.
	Number of audio PES format mismatch	Displays the number of times that an audio PES packet that the decoder does not regard as being applicable to decoding is received. This is counted specifically in the following cases. ・For MPEG-1 Layer 2/MPEG2 AAC -During reception of an audio stream that is not 1PES/1AAU.	{-----} The counter restarts counting from 0 after it expires.
	Number of audio decoding errors (*1)	Displays the number of audio decoding errors detected during decoding.	{-----} The counter restarts counting from 0 after it expires.
Data port	Number of data received in byte on RS-232C	Displays the number of data bytes received through the RS-232C port.	{-----} The counter restarts counting from 0 after it expires.
	Number of data sent in byte on RS-232C	Displays the number of data bytes sent to the RS-232C port.	{-----} The counter restarts counting from 0 after it expires.
	Number of data received in byte on LAN port	Displays the number of data bytes received through the LAN port.	{-----} The counter restarts counting from 0 after it expires.

Port	Item	Description	Display
	Number of data sent in byte on LAN port	Displays the number of data bytes sent to the LAN port.	**{-----}** The counter restarts counting from 0 after it expires.

Note: Each counter, consisting of 32 bits, can count up to 4294967295.

* 1. In case the count-up is made in this counter, IN DWN LED blinks for 10 seconds, I021 (Input data error) is saved as the log information.

3.2.12 Date & Time

Two types of setting modes are available. In one mode, you can enter arbitrary date and time data. In another mode, you can instruct the system to synchronize with the time server on the network.

Click DATE & TIME in the left frame of the Web screen. The Date & Time window appears in the right frame, where you can set the date and time of the clock built in IP-900 series.

Clicking the APPLY PC TIME button sets the date and time of the PC. Clicking the MANUAL UPDATE button after entering an arbitrary date and time sets the specified date and time.

Clicking the SYNCHRONIZE WITH TIME SERVER button promptly adjusts the time with the time server specified in Section 3.2.5, "Time Zone & Time Server." This function is enabled only when "Enable" is specified for Auto Synchronization.

* Any date and time between 00:00:00 on January 1, 1980 and 23:59:59 on December 31, 2030 can be specified.

Figure 3-19 Date & Time Window

3.2.13 Software Management

Click SOFTWARE MANAGEMENT in the left frame of the Web screen. The Software Management window appears in the right frame, where you can install software or restore, save or delete configuration data.

Figure 3-20 Software Management Window

■ Software

Specify the new file to be installed, enter the license key and click the INSTALL button to start installing the software.

■ Configuration

- Configuration Restoration

  Specify the file containing all configuration data and then click the RESTORE button to restore all the configuration data, which was saved previously, to IP-900 series.

- Configuration Backup

  All the configuration data currently stored in IP-900 series can be backed up to the PC by clicking the BACKUP button.

● Deletion of the configuration data

All the configuration data currently stored in IP-900 series can be initialized by clicking the DELETE ALL button. This operation also resets information including the IP address to the state before shipment from the factory.

Table 3-15 Software Management Items

	Item	Description
Software	Current software version	Displays the software version. V-- L-- C-- is displayed immediately after shipment from the factory.
	New software	Specify the full path of the file to be installed. The Browse button can also be used to select the file.
Configuration	Configuration file to be restored	To restore all the configuration data, specify the full path of the file. The Browse button can also be used to select the file.
	RESTORE	Use this button to restore all the configuration data. This button is enabled when a file name is specified in the "Configuration file to be restored" field.
	BACKUP	Use this button to back up all the configuration data from the IP-900 series to the PC.
	DELETE ALL	Use this button to delete all the configuration data from the IP-900 series. This operation resets all the configuration data to the default.
Option	Option license key	Enter the license key obtained when the optional license was purchased.
	Installed option	Names of installed options are displayed.

⚠ CAUTION

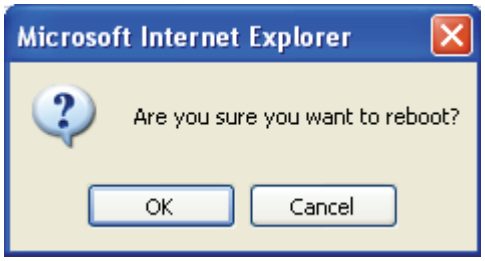
If all the configuration data is changed (restored or deleted), the IP address, subnet mask, and gateway may be changed. Note that this may cause an unexpected problem in your network.

Do not turn power off or press the MNT button while all the configuration data is being changed (being restored or deleted). Doing so may prevent IP-900 series from starting.

If you access another Web screen while all the configuration data is being changed (being restored or deleted), you may lose information on the progress of the changing.

3.2.14 Reboot

Click the REBOOT button in the left frame of the Web screen. The dialog box shown below appears for confirmation. Click the OK button to reboot.



3.3 Encoder

3.3.1 Setting (Encoder)

*** Settings is a group of setting items, of which 10 sets can be registered independently by selecting data numbers as in 3.2.1 Configuration Data.**

Set parameters related to encoding. Make the required settings by referring to **Table 3-17 Main encoder /Sub encoder System Bit Rate Setting Range**, **Table 3-18 Main encoder HD / Sub encoder HD: Video Setting Summary**, **Table 3-19 Main encoder SD: Video Setting Summary**, **Table 3-20 Sub encoder SD: Video Setting Summary (in case of 720x480, 352x480, 720x576 and 352x576 video resolution)**, **Table 3-21 Sub encoder SD: Video Setting Summary (in case of 352x240, 176x112, 352x288, 176x144 video resolution)**, **Table 3-22 Main encoder HD/SD & Sub encoder HD/SD: Audio Setting Summary**

The same screen is displayed for SETTINGS, Video and Audio under <AV input settings>, Main encoder ethernet and Sub encoder ethernet under <Output interface settings>, Encode under <Main encoder settings>, and Encode under <Sub encoder settings>, which are located in the frame on the left side of the Web screen. By clicking on the tab for each, the settings screen for each is displayed at the top of the frame on the right side.

Figure 3-21 Settings Screen (Encoder)

After the completion of the settings, click the APPLY button. The message below appears. Click OK to apply the settings. * Reboot is not required.

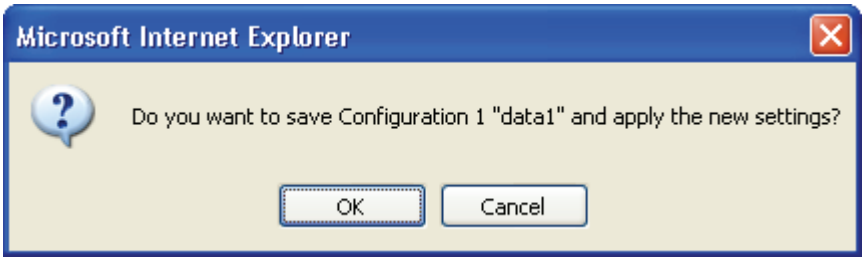


Table 3-16 Encoder Setting Items

Item		Description	Parameter
CPU utilization		Displays the CPU utilization for IP streaming. The CPU utilization increases in accordance with the Ethernet rate of the main encoder and sub encoder. No settings can be made that will cause the CPU utilization to exceed 100%.	You cannot specify this item.
Main encoder	Ethernet bit rate	Displays in units of bps the Ethernet bit rate for the main encoder that is currently set.	You cannot specify this item.
	System bit rate	Displays in units of bps the system bit rate for the main encoder that is currently set.	You cannot specify this item.
Sub encoder	Ethernet bit rate	Displays in units of bps the Ethernet bit rate for the sub encoder that is currently set.	You cannot specify this item.
	System bit rate	Displays in units of bps the system bit rate for the sub encoder that is currently set.	You cannot specify this item.
AV input settings (Video)	Video input port	Specify the interface for video signal input. * HDMI input does not support HDCP. Signals encrypted for the purpose of copyright protection cannot be input.	- SDI (Default) - HDMI - Analog
	Video resolution	Specify the input resolution of the video signal. * The contents that can be set depend on the [Video input port] setting. * To specify HD, the HD software option needs to have been installed.	- SD (Default) - HD
	Video format	Specify the input format of the video signal. * The contents that can be set depend on the [Video resolution] setting.	Values available when [Video resolution] is "HD": - 1080i/59.94 - 1080i/50 - 1080i/60 - 720p/59.94 - 720p/50

Item		Description	Parameter
			Values available when [Video resolution] is "SD": - 480i/59.94 (Default) - 576i/50
	Analog video setup	* If "Analog" is specified for [Video input port], specify the setup level of the analog video input signal.	- Enalbe: 7.5 IRE - Disable (Default): Same as the pedestal level
	Analog video AGC	* If "Analog" is specified for [Video input port], specify whether to enable automatic gain control of the analog video input signal.	- Enable (Default) - Disable
	Display when no video input signal	Specify the fixed image to be sent when the video input is interrupted.	- Color bars (Default) - Gray
	Buffer for video input	Specify whether to enable the protection buffer for video signal input. * If "Enable" is specified, a delay of up to 1 frame is caused, but video input error resistance is improved.	- Enable (Default) - Disable
AV input settings (Audio)	Audio input port	Specify the input format of the audio signal. * The contents that can be set depend on the [Video input port] setting.	Values available when [Video input] is "SDI": - SDI (Default) - Analog
			Values available when [Video input] is "HDMI": - HDMI - Analog
			Values available when [Video input] is "Analog": - Analog
Output interface settings (Main encoder ethernet)	IP version	Specify the IP version of the IP stream for streaming.	- IPv4 (Default) - IPv6
	Streaming mode	Specify the streaming method for the IP interface.	- Multicast (Default) - Unicast (simplex) : Specifying streaming destination - Unicast : Accepting streaming request
	Acceptable stream number	Specify the number of possible streams. * The contents that can be set depend on the [System bit rate] setting. * If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode], only "1" can be specified.	1 to 4 (System rate is to 5.750 Mbps) 1 to 3 (System rate is 5.751 to 7.666 Mbps) 1 to 2 (System rate is 7.667 to 11.500 Mbps) 1 (System rate is 11.501 Mbps or higher) * Default is 1
	Streaming destination IP address	If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode], specify the destination IP address of the streaming IP stream.	IP address (Default: 230.11.3.1) Setting the following values is inhibited: [IPv4] 240.0.0.0 to 255.255.255.255 (Class E) 0.0.0.0, 127.0.0.0 to 127.255.255.255 [IPv6] 0::0

Item		Description	Parameter
	ARP auto update	If "Unicast (simplex)" is specified for [Streaming mode], specify whether to send ARP at regular intervals to check the communication with the streaming destination.	- Enable (Default) - Disable
	ID control for unicast	If "Unicast" is specified for [Streaming mode], specify whether to check the ID for confirming the validity of a unicast stream request.	- Enable - Disable (Default) * If "Enable" is selected, the Unicast ID of the encoder and that of the decoder must be in agreement to perform streaming.
	Unicast ID	If "Enable" is selected for [ID control for unicast], specify the ID to be used for confirming the validity of a unicast streaming request.	Hexadecimal number between 0000 and ffff
	FEC	Specify whether to generate FEC packets.	- Enable (Default) - Disable
	FEC interval	Set the insertion interval for generating an FEC packet.	4 to 24 (Default: 10)
	ARQ	If "Unicast" is specified for [Streaming mode], specify whether to enable the ARQ error correction method.	- Enable - Disable (Default)
	TOS	Set IP packet TOS value.	Hexadecimal number between 00 and ff (Default: 0)
	Protocol	If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode] and "Disable" is selected for [FEC], specify the IP transport protocol.	- UDP - RTP (Default) * If "UDP" is selected, "Standard TS" is fixedly selected for [Stream format].
	Stream format	If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode], "Disable" is selected for [FEC], and "RTP" is specified for [Protocol], specify the stream format.	- Standard TS - Time stamped TS (Default)
	Pro-MPEG FEC	If "Standard TS" is selected for [Stream format], specify whether to generate Pro-MPEG FEC packets.	- Enable - Disable (Default)
	Pro-MPEG Matrix	If "Enable" is selected for [Pro-MPEG FEC], specify the generation matrix values for FEC packets.	A value of [4 to 20] x [4 to 20] can be set. (Default: 10 x 10) * N x N values that exceed 100 cannot be set.
Output interface settings (Sub encoder ethernet port)	Streaming port	Specify the own device port number used for sending streams.	0, 1024 to 64000 (Default: 0) * If 0 is set, a port number between 64100 and 65000 is automatically selected.
		Specify the port number of the destination device used for sending streams.	1024 to 64000 (Default: 5000)

Item		Description	Parameter
	Unicast request port	Specify the port number of the own device used for receiving a unicast streaming request.	1024 to 64000 (Default: 9900)
	ARQ control port	Displays the port number of the own device used for controlling ARQ.	You cannot specify this item. * This item is automatically set according to the [Streaming port] setting.
	Pro-MPEG FEC port	Displays the port number of the own device used for sending Pro-MPEG FEC.	You cannot specify this item. * This item is automatically set according to the [Streaming port] setting.
Output interface settings (Sub encoder ethernet)	IP version	Specify the IP version of the IP stream for streaming.	- IPv4 (default) - IPv6
	Streaming mode	Specify the streaming method for the IP interface.	- Multicast (Default) - Unicast (simplex) : Specifying streaming destination - Unicast : Accepting streaming request
	Acceptable stream number	Specify the number of possible streams. * The contents that can be set depend on the [System bit rate] setting. * If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode], only "1" can be specified.	1 to 4 (System rate is to 5.750 Mbps) 1 to 3 (System rate is 5.751 to 7.666 Mbps) 1 to 2 (System rate is 7.667 to 11.500 Mbps) 1 (System rate is 11.501 Mbps or higher) * Default is 1
	Streaming destination IP address	If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode], specify the destination IP address of the streaming IP stream.	IP address (Default: 230.11.3.1) Setting the following values is inhibited: [IPv4] 240.0.0.0 to 255.255.255.255 (Class E) 0.0.0.0, 127.0.0.0 to 127.255.255.255 [IPv6] 0::0
	ARP auto update	If "Unicast (simplex)" is specified for [Streaming mode], specify whether to send ARP at regular intervals to check the communication with the streaming destination.	- Enable (Default) - Disable
	ID control for unicast	If "Unicast" is specified for [Streaming mode], specify whether to check the ID for confirming the validity of a unicast stream request.	- Enable - Disable (Default) * If "Enable" is selected, the Unicast ID of the encoder and that of the decoder must be in agreement to perform streaming.
	Unicast ID	If "Enable" is selected for [ID control for unicast], specify the ID to be used for confirming the validity of a unicast streaming request.	Hexadecimal number between 0000 and ffff (Default: 0000)
	FEC	Specify whether to generate FEC packets.	- Enable (Default) - Disable
	FEC interval	Set the insertion interval for generating an FEC packet.	4 to 24 (Default: 10)

Item		Description	Parameter
	ARQ	If "Unicast" is specified for [Streaming mode], specify whether to enable the ARQ error correction method.	- Enable - Disable (Default)
	TOS	Set IP packet TOS value.	Hexadecimal number between 00 and ff (Default: 0)
	Protocol	If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode] and "Disable" is selected for [FEC], specify the IP transport protocol.	- UDP - RTP (Default) * If "UDP" is selected, "Standard TS" is fixedly selected for [Stream format].
	Stream format	If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode], "Disable" is selected for [FEC], and "RTP" is specified for [Protocol], specify the stream format.	- Standard TS - Time stamped TS (Default)
	Pro-MPEG FEC	If "Standard TS" is selected for [Stream format], specify whether to generate Pro-MPEG FEC packets.	- Enable - Disable (Default)
	Pro-MPEG Matrix	If "Enable" is selected for [Pro-MPEG FEC], specify the generation matrix values for FEC packets.	A value of [4 to 20] x [4 to 20] can be set. (Default: 10 x 10) * N x N values that exceed 100 cannot be set.
Output interface settings (Sub encoder ethernet port)	Streaming port	Specify the own device port number used for sending streams.	0, 1024 to 64000 (Default: 0) * If 0 is set, a port number between 64100 and 65000 is automatically selected.
		Specify the port number of the destination device used for sending streams.	1024 to 64000 (Default: 5010)
	Unicast request port	Specify the port number of the own device used for receiving a unicast streaming request.	1024 to 64000 (Default: 9910)
	ARQ control port	Displays the port number of the own device used for controlling ARQ.	You cannot specify this item. * This item is automatically set according to the [Streaming port] setting.
	Pro-MPEG FEC port	Displays the port number of the own device used for sending Pro-MPEG FEC.	You cannot specify this item. * This item is automatically set according to the [Streaming port] setting.
Main encoder settings (Encode)	Encoding operation	Specify whether to start encoding operation after the device is started or after the main encoder settings are changed.	- Enable - Disable (Default)
	Bit rate mode	Specify how the bit rate is specified.	- Video bit rate (Default) - System bit rate

Item		Description	Parameter
	System bit rate - HD -	If "HD" is specified for [Video resolution] and "System bit rate" is specified for [Bit rate mode], specify the system bit rate of the stream to be distributed.	For setting values, see **Table 3-17 Main encoder /Sub encoder System Bit Rate Setting Range**.
	Video resolution - HD -	If "HD" is specified for [Video resolution], specify the resolution of the video to be encoded. * The contents that can be set depend on the [Video format] setting.	For setting values, see **Table 3-18 Main encoder HD / Sub encoder HD: Video Setting Summary**
	Video frame rate - HD -	If "HD" is specified for [Video resolution], specify the frame rate of the video to be encoded.	For setting values, see **Table 3-18 Main encoder HD / Sub encoder HD: Video Setting Summary**
	Encoding control mode - HD -	If "HD" is specified for [Video resolution], specify the control mode for video encoding.	- Quality (IBBP) (Default) - Low latency (PPPP) - Low latency (IPPP)
	Video bit rate - HD -	If "HD" is specified for [Video resolution] and "Video bit rate" is specified for [Bit rate mode], specify the video bit rate.	For setting values, see **Table 3-18 Main encoder HD / Sub encoder HD: Video Setting Summary**
	Bit rate mode - HD -	If "HD" is specified for [Video resolution], specify the bit rate mode of the video to be encoded.	- CBR (Default)
	Video PES - HD -	If "HD" is specified for [Video resolution], specify the PES structure of video encoding. * In case [Video format] is 1080i, only 1Field/1PES is selectable except for the case that [Encoding control mode] is set as Standard (IBBP), and in case of 720p, only 1Frame/1PES is selectable.	- 1Field/1PES (Default) - 1Frame/1PES
	Profile - HD -	If "HD" is specified for [Video resolution], specify the profile of the video encoding mode.	- High profile (Default) - Main profile
	PPS interval - HD -	If "HD" is specified for [Video resolution], specify the PPS interval for video encoding.	- GOP (Default) - Picture
	PPS ID - HD -	If "HD" is specified for [Video resolution], specify the PPS ID mode for video encoding.	- Fixed (Default) - Adaptive
	Pre-filter - HD -	If "HD" is specified for [Video resolution], specify the strength of the pre-filter.	- OFF (Default) - LIGHT - MEDIUM - HEAVY
	Refresh cycle - HD -	If "HD" is specified for [Video resolution], specify the refresh cycle. * The contents that can be selected depend on the [Video format] and [Encoding control mode] settings.	For setting values, see **Table 3-18 Main encoder HD / Sub encoder HD: Video Setting Summary**

Item		Description	Parameter
	Audio format - HD -	If "HD" is specified for [Video resolution], specify the audio encoding format.	- MPEG1 layer 2 (Default) - MPEG2 AAC - No audio
	Audio bit rate - HD -	If "HD" is specified for [Video resolution], specify the audio bit rate. * The contents that can be set depend on the [Audio format] setting.	For setting values, see **Table 3-22 Main encoder HD/SD & Sub encoder HD/SD: Audio Setting Summary**
	PSI insertion interval- HD -	If "HD" is specified for [Video resolution], specify the PAT and PMT insertion intervals.	- 100 to 1000 ms (Default: 100 ms) * Setting can be made in units of 100 ms.
	System bit rate - SD -	If "SD" is specified for [Video resolution] and "System bit rate" is specified for [Bit rate mode], specify the system bit rate of the stream to be distributed.	For setting values, see **Table 3-17 Main encoder /Sub encoder System Bit Rate Setting Range**
	Video resolution - SD -	If "SD" is specified for [Video resolution], specify the resolution of the video to be encoded. * The contents that can be set depend on the [Video format] setting.	For setting values, see **Table 3-19 Main encoder SD: Video Setting Summary**
	Video frame rate - SD -	If "SD" is specified for [Video resolution], specify the frame rate of the video to be encoded.	For setting values, see **Table 3-19 Main encoder SD: Video Setting Summary**
	Encoding control mode - SD -	If "SD" is specified for [Video resolution], specify the control mode for video encoding.	- Quality (IBBP) (Default) - Low latency (PPPP) - Low latency (IPPP)
	Video bit rate - SD -	If "SD" is specified for [Video resolution] and "Video bit rate" is specified for [Bit rate mode], specify the video bit rate. * The contents that can be set depend on the [Video resolution] setting. * Displays the bit rate assigned to video if "System bit rate" is specified for [Bit rate mode]. You cannot specify this item.	For setting values, see **Table 3-19 Main encoder SD: Video Setting Summary**
	Bit rate mode - SD -	If "SD" is specified for [Video resolution], specify the bit rate mode of the video to be encoded.	- CBR (Default)
	Video PES - SD -	If "SD" is specified for [Video resolution], specify the PES structure of video encoding. * Only 1Field/1PES is selectable except for the case that [Encoding control mode] is set as Standard (IBBP).	- 1Field/1PES (Default) - 1Frame/1PES
	Profile - SD -	If "SD" is specified for [Video resolution], specify the profile of the video encoding mode.	- High profile (Default) - Main profile

Item		Description	Parameter
	PPS interval - SD -	If "SD" is specified for [Video resolution], specify the PPS interval for video encoding.	- GOP (Default) - Picture
	PPS ID - SD -	If "SD" is specified for [Video resolution], specify the PPS ID mode for video encoding.	- Fixed (Default) - Adaptive
	Pre-filter - SD -	If "SD" is specified for [Video resolution], specify the strength of the pre-filter.	- OFF (Default) - LIGHT - MEDIUM - HEAVY
	Refresh cycle - SD -	If "SD" is specified for [Video resolution], specify the refresh cycle. * The contents that can be selected depend on the [Video format] and [Encoding control mode] settings.	For setting values, see **Table 3-19 Main encoder SD: Video Setting Summary**
	Audio format - SD -	If "SD" is specified for [Video resolution], specify the audio encoding format.	- MPEG1 layer 2 (Default) - MPEG2 AAC - No audio
	Audio bit rate - SD -	If "SD" is specified for [Video resolution], specify the audio bit rate. * The contents that can be set depend on the [Audio format] setting.	For setting values, see **Table 3-22 Main encoder HD/SD & Sub encoder HD/SD: Audio Setting Summary**
	PSI insertion interval - SD -	If "SD" is specified for [Video resolution], specify the PAT and PMT insertion intervals.	- 100 to 1000 ms (Default: 100 ms) * Setting can be made in units of 100 ms.
	Padded data pattern	Specify the padded data pattern used in video encoding data. * If "IP satellite mode" is specified, video encoding data is padded with NULL packets. Therefore, the percentage of NULL packets in a distributed stream increases.	- Normal (Default) - IP satellite mode
Sub encoder settings (Encode)	Encoding operation	Specify whether to start encoding operation after the device is started or after the sub encoder settings are changed.	- Enable - Disable (Default)
	Downconverter	If "HD" is specified for [Video resolution] and a setting other than "1080i/60" is specified for [Video format], specify the conversion mode used for down-converting HD video to SD video.	- None (Default) - Letter box - Side cropped
	Bit rate mode	Specify how the bit rate is specified.	- Video bit rate (Default) - System bit rate
	System bit rate - HD -	If "HD" is specified for [Video resolution], "None" is specified for [Downconverter], and "System bit rate" is specified for [Bit rate mode], specify the system bit rate of the stream to be distributed.	For setting values, see **Table 3-17 Main encoder /Sub encoder System Bit Rate Setting Range**

Item		Description	Parameter
	Video resolution - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the resolution of the video to be encoded. * The contents that can be set depend on the [Video format] setting.	For setting values, see **Table 3-18 Main encoder HD / Sub encoder HD: Video Setting Summary**
	Video frame rate - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the frame rate of the video to be encoded. * The contents that can be set depend on the [Video format] setting.	For setting values, see **Table 3-18 Main encoder HD / Sub encoder HD: Video Setting Summary**
	Encoding control mode - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the control mode for video encoding.	- Quality (IBBP) (Default) - Low latency (PPPP) - Low latency (IPPP)
	Video bit rate - HD -	If "HD" is specified for [Video resolution], "None" is specified for [Downconverter], and "Video bit rate" is specified for [Bit rate mode], specify the video bit rate. * The contents that can be set depend on the [Video resolution] setting. * Displays the bit rate assigned to video if "System bit rate" is specified for [Bit rate mode]. You cannot specify this item.	For setting values, see **Table 3-18 Main encoder HD / Sub encoder HD: Video Setting Summary**
	Bit rate mode - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the video bit rate mode.	- CBR (Default)
	Video PES - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the PES structure of video encoding. * In case [Video format] is 1080i, only 1Field/1PES is selectable except for the case that [Encoding control mode] is set as Standard (IBBP), and in case of 720p, only 1Frame/1PES is selectable.	- 1Field/1PES (Default) - 1Frame/1PES
	Profile - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the profile of the video encoding mode.	- High profile (Default) - Main profile

Item		Description	Parameter
	PPS interval - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the PPS interval for video encoding.	- GOP (Default) - Picture
	PPS ID - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the PPS ID mode for video encoding.	- Fixed (Default) - Adaptive
	Pre-filter - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the strength of the pre-filter.	- OFF (Default) - LIGHT - MEDIUM - HEAVY
	Refresh cycle - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the refresh cycle. * The contents that can be selected depend on the [Video format] and [Encoding control mode] settings.	For setting values, see **Table 3-18 Main encoder HD / Sub encoder HD: Video Setting Summary**
	Audio format - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the audio encoding format.	- MPEG1 layer 2 (Default) - MPEG2 AAC - No audio
	Audio bit rate - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the audio bit rate.	For setting values, see **Table 3-22 Main encoder HD/SD & Sub encoder HD/SD: Audio Setting Summary**
	PSI insertion interval - HD -	If "HD" is specified for [Video resolution] and "None" is specified for [Downconverter], specify the PAT and PMT insertion intervals.	- 100 to 1000 ms (Default: 100 ms) * Setting can be made in units of 100 ms.
	System bit rate - SD -	If "SD" is specified for [Video resolution], "Letter box" or "Side cropped" is specified for [Downconverter], and "System bit rate" is specified for [Bit rate mode], specify the system bit rate of the stream to be distributed.	For setting values, see **Table 3-17 Main encoder /Sub encoder System Bit Rate Setting Range**
	Video resolution - SD -	If "SD" is specified for [Video resolution] and "Letter box" or "Side cropped" is specified for [Downconverter], specify the resolution of the video to be encoded. * The contents that can be set depend on the [Video format] setting.	For setting values, see **Table 3-20 Sub encoder SD: Video Setting Summary (in case of 720x480, 352x480, 720x576 and 352x576 video resolution)** and **Table 3-21 Sub encoder SD: Video Setting Summary (in case of 352x240, 176x112, 352x288, 176x144 video resolution)**

Item		Description	Parameter
	Video frame rate - SD -	If "SD" is specified for [Video resolution] and "Letter box" or "Side cropped" is specified for [Downconverter], specify the frame rate of the video to be encoded. * The contents that can be set depend on the [Video resolution] setting.	For setting values, see **Table 3-20 Sub encoder SD: Video Setting Summary (in case of 720x480, 352x480, 720x576 and 352x576 video resolution)** and **Table 3-21 Sub encoder SD: Video Setting Summary (in case of 352x240, 176x112, 352x288, 176x144 video resolution)**
	Encoding control mode - SD -	If "SD" is specified for [Video resolution] and "Letter box" or "Side cropped" is specified for [Downconverter], specify the control mode for video encoding. * The contents that can be set depend on the [Video resolution] and [Video frame rate] settings.	For setting values, see **Table 3-20 Sub encoder SD: Video Setting Summary (in case of 720x480, 352x480, 720x576 and 352x576 video resolution)** and **Table 3-21 Sub encoder SD: Video Setting Summary (in case of 352x240, 176x112, 352x288, 176x144 video resolution)**
	Video bit rate - SD -	If "SD" is specified for [Video resolution] or "Letter box" or "Side cropped" is specified for [Downconverter], and "Video bit rate" is specified for [Bit rate mode], specify video bit rate. * The contents that can be set depend on the [Video resolution] setting. * Displays the bit rate assigned to video if "System bit rate" is specified for [Bit rate mode]. You cannot specify this item.	For setting values, see **Table 3-20 Sub encoder SD: Video Setting Summary (in case of 720x480, 352x480, 720x576 and 352x576 video resolution)** and **Table 3-21 Sub encoder SD: Video Setting Summary (in case of 352x240, 176x112, 352x288, 176x144 video resolution)**
	Bit rate mode - SD -	If "SD" is specified for [Video resolution] or "Letter box" or "Side cropped" is specified for [Downconverter], specify the video bit rate mode. * The contents that can be selected depend on the [Video resolution], [Video frame rate] and [Encoding control mode] settings.	If [Video resolution] is "352x240" or "352x288," [Video frame rate] is "7.493fps" or "6.25fps," and [Encoding control mode] is "Standard (IBBP)" - VBR In cases other than the above - CBR (Default)
	Video PES - SD -	If "SD" is specified for [Video resolution] and "Letter box" or "Side cropped" is specified for [Downconverter], specify the PES structure of video encoding. * In case [Video resolution] is "720x480" or "720x576" or "352x480" or "352x576", only 1Field/1PES is selectable except for the case that [Encoding control mode] is set as Standard (IBBP).. In case of "352x240" or "352x288" or "176x112" or "176x144", only 1Frame/1PES is selectable.	- 1Field/1PES (Default) - 1Frame/1PES

Item		Description	Parameter
	Profile - SD -	If "SD" is specified for [Video resolution] or "Letter box" or "Side cropped" is specified for [Downconverter], specify the profile of the video encoding mode.	- High profile (Default) - Main profile
	PPS interval - SD -	If "SD" is specified for [Video resolution] and "Letter box" or "Side cropped" is specified for [Downconverter], specify the PPS interval for video encoding.	- GOP (Default) - Picture
	PPS ID - SD -	If "SD" is specified for [Video resolution] and "Letter box" or "Side cropped" is specified for [Downconverter], specify the PPS ID mode for video encoding.	- Fixed (Default) - Adaptive
	Pre-filter - SD -	If "SD" is specified for [Video resolution] or "Letter box" or "Side cropped" is specified for [Downconverter], specify the strength of the pre-filter.	If [Video resolution] is "720 x 480," "720 x 576," "352 x 480," or "352 x 576" - OFF (Default) - LIGHT - MEDIUM - HEAVY
			If [Video resolution] is "352 x 240," "352 x 288," "176 x 112," or "176 x 144" - No setting items exist.
	Refresh cycle - SD -	If "SD" is specified for [Video resolution] or "Letter box" or "Side cropped" is specified for [Downconverter], specify the refresh cycle.	For setting values, see **Table 3-20 Sub encoder SD: Video Setting Summary (in case of 720x480, 352x480, 720x576 and 352x576 video resolution)** and **Table 3-21 Sub encoder SD: Video Setting Summary (in case of 352x240, 176x112, 352x288, 176x144 video resolution)**
	Audio format - SD -	If "SD" is specified for [Video resolution] or "Letter box" or "Side cropped" is specified for [Downconverter], specify the audio encoding mode.	Encoding format - MPEG1 layer 2 (Default) - MPEG2 AAC - No audio
	Audio bit rate - SD -	If "SD" is specified for [Video resolution] or "Letter box" or "Side cropped" is specified for [Downconverter], specify the audio bit rate. The contents that can be set depend on the [Audio format] setting.	For setting values, see **Table 3-22 Main encoder HD/SD & Sub encoder HD/SD: Audio Setting Summary**
	PSI insertion interval - SD -	If "SD" is specified for [Video resolution] or "Letter box" or "Side cropped" is specified for [Downconverter], specify the PAT and PMT insertion intervals.	- 100 to 1000 ms (Default: 100 ms) * Setting can be made in units of 100 ms.

Item		Description	Parameter
	Padded data pattern	Specify the padded data pattern used in video encoding data. * If "IP satellite mode" is specified, video encoding data is padded with MPEG2-TS NULL packets. Therefore, the percentage of NULL packets in a distributed stream increases.	- Normal (Default) - IP satellite mode

Table 3-17 Main encoder /Sub encoder System Bit Rate Setting Range

Main Encoder／Sub-encoder	
Video Resolution	System bit rate setting range
1920×1080 1280×720 1440×1080 960×720	Up to30.000Mbps (can be set in 1Kbps increment) The system bit rate setting with the video bit rate range of 4 to 27Mbps is enabled. You cannot set the system bit rate range with the video bit rate range of lower than 4Mbps. When the system bit rate is set with the video bit rate of higher than 27Mbps, the video bit rate is fixed to 27Mbps.
960×1080 640×720	Up to30.000Mbps (can be set in 1Kbps increment) The system bit rate setting with the video bit rate range of 1 to 27Mbps is enabled. You cannot set the system bit rate range with the video bit rate range of lower than 1Mbps. When the system bit rate is set with the video bit rate of higher than 27Mbps, the video bit rate is fixed to 27Mbps.
720×480 720×576	Up to12.000Mbps (can be set in 1Kbps increment) The system bit rate setting with the video bit rate range of 1 to 10Mbps is enabled. You cannot set the system bit rate range with the video bit rate range of lower than 1Mbps. When the system bit rate is set with the video bit rate of higher than 10Mbps, the video bit rate is fixed to 10Mbps.
352×480 352×576	Up to12.000Mbps (can be set in 1Kbps increment) The system bit rate setting with the video bit rate range of 0.5 to 10Mbps is enabled. You cannot set the system bit rate range with the video bit rate range of lower than 0.5Mbps. When the system bit rate is set with the video bit rate of higher than 10Mbps, the video bit rate is fixed to 10Mbps.
352×240 352×288 *Only Sub-encoder	Up to 1500Kbps (can be set in 1Kbps increment) The system bit rate setting with the video bit rate range of 50 to 512kbps is enabled. You cannot set the system bit rate range with the video bit rate range of lower than 50kbps. When the system bit rate is set with the video bit rate of higher than 512kbps, the video bit rate is fixed to 512kbps.
176x112 176x144 *Only Sub-encoder	Up to 1000Kbps (can be set in 1Kbps increment) The system bit rate setting with the video bit rate range of 25 to 50kbps is enabled. You cannot set the system bit rate range with the video bit rate range of lower than 25kbps. When the system bit rate is set with the video bit rate of higher than 50kbps, the video bit rate is fixed to 50kbps.

Table 3-18 Main encoder HD / Sub encoder HD: Video Setting Summary

Video input format	Video resolution						Video Frame rate	Video bit rate (Mbps)		Encoding control mode Refresh cycle		
	1920x1080	1440x1080	960x1080	1280x720	960x720	640x720	Fixed value	1/2/3	4/5/6/7/8/9/10/11/ 12/14/16/18/20/27	IBBP	IPPP	PPPP
1080i/60	●	●	●				30fps	○	●	15 frame / 30 frame / 60 frame		34 frame / 68 frame / 136 frame
1080i/59.94	●	●	●				29.97fps	○	●			
1080i/50	●	●	●				25fps	○	●	12 frame/ 24 frame/ 48 frame		
720p/59.94				●	●	●	59.94fps	○	●	30 frame / 60 frame / 120 frame		90 frame / 180 frame/ 360 frame
720p/50				●	●	●	50fps	○	●	24 frame / 48 frame / 96 frame		

●: Settable, ○: Settable only when video resolution is 960x1080 or 640x720.

Table 3-19 Main encoder SD: Video Setting Summary

Video input format	Video resolution				Video Frame rate	Video bit rate (Mbps)		Encoding control mode Refresh cycle		
	720x480	352x480	720x576	352x576	Fixed value	0.5	1/1.3/2/3/4/5/ 6/7/8/9/10	IBBP	IPPP	PPPP
480i/59.94	●	●			29.97fps	○	●	15frame / 30 frame / 60 frame		30 frame / 60 frame / 120frame
576i/50			●	●	25fps	○	●	12 frame / 24 frame/ 48 frame		36frame / 72frame/ 144 frame

●: Settable, ○: Settable only when video resolution is 352x480 or 352x576.

Table 3-20 Sub encoder SD: Video Setting Summary (in case of 720x480, 352x480, 720x576 and 352x576 video resolution)

Video input format	Video resolution				Video resolution	Video bit rate (Mbps)		Encoding control mode Refresh cycle		
	720x480	352x480	720x576	352x576	Fixed value	0.5	1/1.3/2/3/4/5/ 6/7/8/9/10	IBBP	IPPP	PPPP
480i/59.94	●	●			29.97fps	○	●	15frame / 30 frame / 60 frame		30 frame / 60 frame / 120frame
1080i/59.94	●	●			29.97fps	○	●			
720p/59.94	●	●			29.97fps	○	●			
576i/50			●	●	25fps	○	●	12 frame / 24 frame/ 48 frame		36frame / 72frame/ 144 frame
1080i/50			●	●	25fps	○	●			
720p/50			●	●	25fps	○	●			

●: Settable, ○: Settable only when video resolution is 352x480 or 352x576

Table 3-21 Sub encoder SD: Video Setting Summary (in case of 352x240, 176x112, 352x288, 176x144 video resolution)

Video input format	Video resolution	Video resolution	Video bit rate (Kbps)						Encoding control mode			Refresh cycle			
			25	50	192	256	384	512	IBBP	IPPP	PPPP	5	8	12	15
480i/59.94 1080i/59.94 720p/59.94	352x240	14.985fps					●	●		●					●
	352x240	7.493fps				●	●		●	●					●
	352x240	1.998fps		●	●					●			●		
	176x112	1.998fps	●	●						●			●		
576i/50 1080i/50 720p/50	352x288	12.5fps					●	●		●				●	
	352x288	6.25fps				●	●		●	●				●	
	352x288	1.667fps		●	●					●		●			
	176x144	1.667fps	●	●						●		●			

●: Settable

Table 3-22 Main encoder HD/SD & Sub encoder HD/SD: Audio Setting Summary

Audio format	Autio bit rate (Kbps)
MPEG1 Layer2	384/256/128
MPEG2 AAC	256/128/64
None	---

⚠ CAUTION

The maximum system bit rate when the streaming and recording are activated simultaneously is limited up to 14.049 Mbps.

Recording and simultaneous streaming using the sub encoder are limited to cases in which [Video resolution] is "352 x 240," "352 x 288," "176 x 112," or "176 x 144" as described in Sub encoder settings (Encode) in Section 3.3.1, "Setting (Encoder)."

3.3.2 Encoder Address Report

*** This function is enabled only when the device operation mode is encoder mode.**

*** Encoder address report is a group of setting items, of which 10 sets can be registered independently by selecting data numbers as in 3.2.1 Configuartion Data.**

To dynamically obtain an IP address using DHCP or PPPoE, the IP address needs to be known. If the report destination is specified in advance, the obtained IP address is reported to the specified destination. IP-900 series decoder or a PC running a certain type of software (*1) is normally specified as the report destination. If the decoder is specified in advance as the report destination, you can specify an encoder from the Web screen to request streaming. (See Section 3.5.2 for information about decoder setting and operation.)

The same screen is displayed for Encoder Address Report, Main Encoder, and Sub Encoder, which are located in the frame on the left side of the Web screen. By clicking on the tab for each, the Encoder Address Report window for each is displayed at the top of the frame on the right side.

Make the required settings by referring to **Table 3-23 Setting Items for Encoder Address Report**.

Figure 3-22 Encoder Address Report Window

After the completion of the settings, click the APPLY button. The message below appears. Click OK to apply the settings. * Reboot is not required.

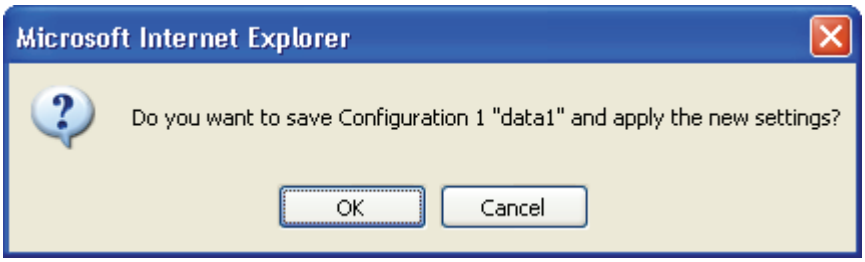


Table 3-23 Setting Items for Encoder Address Report

	Item		Description	Value
Main encoder report settings	Encoder name		Specify an arbitrary name used to identify the encoder.	Up to 16 characters
	Local port		Specify the own device port number used to send an encoder address message.	0 or 1024 to 64000 (Default: 0) * If 0 is specified, one of the port numbers from 64100 to 65000 is automatically selected.
Main encoder destination settings	Destination 1 to 10	IP version	Specify the IP version of the IP address of the destination device to which the encoder report is to be sent.	- IPv4 (default) - IPv6
		IP address	Specify the IP address of the destination device to which the encoder report is to be sent.	Other than 0.0.0.0 (Default: Blank) * A blank field means that no value is specified. * A multicast address cannot be set.
		Destination port	Specify the port number of the destination device to which the encoder report is to be sent.	- Blank or 1024 to 64000 (Default: Blank) * A blank field means that no value is specified.
Sub encoder report settings	Encoder name		Specify an arbitrary name used to identify the encoder.	Up to 16 characters
	Local port		Specify the own device port number used to send an encoder address message.	0 or 1024 to 64000 (Default: 0) * If 0 is specified, one of the port numbers from 64100 to 65000 is automatically selected.
Sub encoder destination settings	Destination 1 to 10	IP version	Specify the IP address of the destination device to which the encoder report is to be sent.	- IPv4 (Default) - IPv6
		IP address		Other than 0.0.0.0 (Default: Blank) * A blank field means that no value is specified. * A multicast address cannot be set.
		Destination port	Specify the port number of the destination device to which the encoder report is to be sent.	- Blank or 1024 to 64000 (Default: Blank) * A blank field means that no value is specified.

⚠ CAUTION

The device does not send the encoder address report when the following condition applies: [IP version] of Output interface settings (Main encoder ethernet) described in Section 3.3.1, "Setting (Encoder)," and [IP version] of Main encoder destination settings described in Section 3.3.2, "Encoder Address Report," do not match. (The same thing can be said regarding the sub encoder.)

The device does not send the encoder address report when the following condition applies: "Unicast (simplex)" is selected for [Streaming mode] of Output interface settings (Main encoder ethernet) described in Section 3.3.1, "Setting (Encoder)," and [Streaming destination IP address] of Output interface settings (Main encoder ethernet) described in Section 3.3.1, "Setting (Encoder)," and [IP address] of Main encoder destination settings described in Section 3.3.2, "Encoder Address Report," do not match. (The same thing can be said regarding the sub encoder.)

3.3.3 Superimpose

*** 10 sets of settings can be configured independently by selecting appropriate configuration data as explained in Section 3.2.1, "Configuration Data."**

The superimpose function superimposes a character string (consisting of up to 24 en-size or 48 en-size characters) or a time indication (year, month, day, hour, minute, and second) on the encoded image. You can specify up to four types of string superimpositions (or one type of time superimposition) on the main and sub encoders.

The same screen is displayed for Superimpose, Main encoder, and Sub-encoder, which are located in the left frame on the Web screen. Clicking the tab for each brings the superimposition information window to the top of the right frame. Specify the necessary information by referring to **Table 3-24 Main encoder/Sub encoder superimpose settings**

Figure 3-23 Superimpose Window

After completing the setting, click the APPLY button. The message below appears. Click OK to apply the settings. * Reboot is not required.

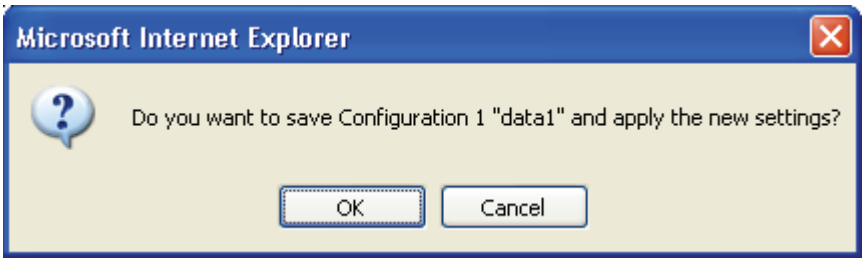


Table 3-24 Main encoder/Sub encoder superimpose settings

	Item	Description	Value
Main/Sub encoder superimpose settings 1 to 4	Superimpose setting	Specify whether to enable character superimposition by using the superimpose function to display the characters.	Enable Disable (default)
	Horizontal position	Specify the number of pixels from the left end of the window to indicate the horizontal position from where the specified character string starts to be superimposed.	0 to 1919 *1
	Vertical position	Specify the number of lines from the top end of the window to indicate the vertical position from where the specified character string starts to be superimposed.	0 to 1079 *1
	Font size	Specify the font size of character strings to be superimposed.	- SD:32/HD:64 Displays characters in a size of: 32×32 dots if the input resolution is SD 64×64 dots if the input resolution is HD - SD:48/HD:96 Displays characters in a size of: 48×48 dots if the input resolution is SD 96×96 dots if the input resolution is HD
	Font color	Specify the font color of character strings to be superimposed.	- White (default) - Black - Red - Blue - Green

	Item	Description	Value
	Effects	Specify the background of character strings to be superimposed.	- Filled (default) - Shaded - Bordered
	Background color	Specify the background color of character strings to be superimposed.	- Black (default) - Translucent black - White - Translucent white - Transparent
	Time * Only available for superimpose 4 settings	Specify whether to superimpose time.	- Enable - Disable (Default)
	Character string	Specify the character strings to be superimposed.	A character string that consists of 48 single-space characters or 24 double-space characters. * Single-space kana characters are handled as double-space character.

*1 The display area varies depending on the monitor that outputs the image.

3.3.4 Operation & Status (Encoder)

*** This function is enabled only when the device operation mode is encoder mode.**

Click OPERATION & STATUS in the left frame of the Web screen. The Operation & Status window appears in the right frame.

From this window, you can check encoder operation information such as on encoding and video input.

Selecting {3sec, 5sec, or 10sec} from [Auto update] enables automatic updating of the Operation & Status information in specified time intervals. Selecting {none} from [Auto update] disables the automatic updating.

Figure 3-24 Operation & Status (Encoder) Window

You can control encoding and streaming. When the status is "Stopped," clicking the START button starts encoding. To stop encoding, click the STOP button.

Table 3-25 Encoder Operation & Status Display Items

Item	Display
Main Encoder	**{Operating / Stopped}** Displays the operation status as the result of setting in the Settings window or the operation of the encoding START or STOP button.
	Number of possible streams: N **Destination IP address: Port number {Normal / Fault}** N=1 If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode], the value is fixed to "1". 1-4 If "Unicast" is specified for [Streaming mode], a value from "1" to "4" is displayed. The number of possible streams depends on the [System bit rate] and [Acceptable stream number] settings. Displays whether an error occurred for each streaming destination IP address.
Sub Encoder	**{Operating / Stopped}** Displays the operation status as the result of setting in the Settings window or the operation of the encoding START or STOP button.
	Number of possible streams: N **Destination IP address: Port number {Normal / Fault}** N=1 If "Multicast" or "Unicast (simplex)" is specified for [Streaming mode], the value is fixed to "1". 1-4 If "Unicast" is specified for [Streaming mode], a value from "1" to "4" is displayed. The number of possible streams depends on the [System bit rate] and [Acceptable stream number] settings. Displays whether an error occurred for each streaming destination IP address.
Video input	**{Normal / Fault / No video signal}** Displays the input state of the video signal.

* Notation: {A/B} indicates that either A or B is displayed.

⚠ CAUTION

The maximum system bit rate when the streaming and recording are activated simultaneously is limited up to 14.049 Mbps

Recording and simultaneous streaming using the sub encoder are limited to cases in which [Video resolution] is "352 x 240," "352 x 288," "176 x 112," or "176 x 144" as described in Sub encoder settings (Encode) in Section 3.3.1, "Setting (Encoder)."

3.4 Recorder

An optional CF card is required for this function.

3.4.1 Setting (Recorder)

*** Settings is a group of setting items, of which 10 sets can be registered independently by selecting data numbers as in 3.2.1 Configuration Data.**

Set parameters related to recording. Make the required settings by referring to **Table 3-26 Recorder**.

The recorder records encoded streams when the encoder operates. For some system bit rates, recording cannot be performed because of performance limitations.

Figure 3-25 Setting (Recorder) Window

After the completion of the settings, click the APPLY button. The message below appears. Click OK to apply the settings. * Reboot is not required.

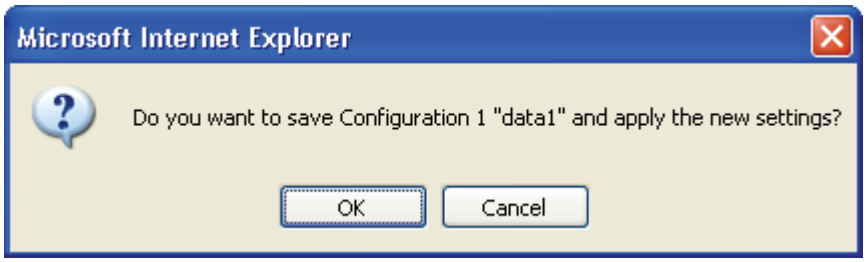


Table 3-26 Recorder Setting Items

	Item	Description	Parameter
Recorder settings	Recording operation	Specify whether to perform recording operation upon start of the device.	- Enable - Disable (Default)
	Recording mode	Select the recording mode.	- Record until full - Overwrite (Default) - Record until start position

⚠ CAUTION

Recorded data is destroyed if the device power is turned off during recording. Be sure to stop recording before turning off the device power.

If the device is started with an unused CF card inserted, the CF card is formatted unconditionally.

If [Stream format] of Output interface settings (Main encoder ethernet) described in Section 3.3.1, "Setting (Encoder)," is "Standard TS," recording cannot be performed.

The maximum system bit rate to record into CF card is limited up to 14.049 Mbps. Recording to and reading from the CF card simultaneously is possible if the system bit rate does not exceed 6 Mbps.

Recording and simultaneous streaming using the sub encoder are limited to cases in which [Video resolution] is "352 x 240," "352 x 288," "176 x 112," or "176 x 144" as described in Sub encoder settings (Encode) in Section 3.3.1, "Setting (Encoder)."

3.4.2 File List

*** This function is enabled only when the device operation mode is encoder mode.**

Click FILE LIST in the left frame of the Web screen. The Data List window appears in the right frame.

In this window, you can check the file list or download files.

Figure 3-26 File List Window

Clicking the UPDATE button updates the list.

To download a file, check the relevant check column at the left end of the list and confirm that the start time and acquisition time are automatically set in the Download field, and then click the DOWNLOAD button.

Clicking the DELETE FIRST FILE button deletes the first file in the list. Clicking the DELETE ALL FILES button deletes all files.

Recorded data can be downloaded by specifying any time range within the range indicated for each file in the list. Note, however, that data with the specified time range spanning two or more files cannot be downloaded.

Data is downloaded with a file name in the following format:

yyyymmddhhmmssHHMMSS.mpg

<Description>

yyyy = Year

mm = Month

dd = Day

hh = Hour

mm = Minute

ss = Second

HH = Hours (acquisition duration specified in hours)

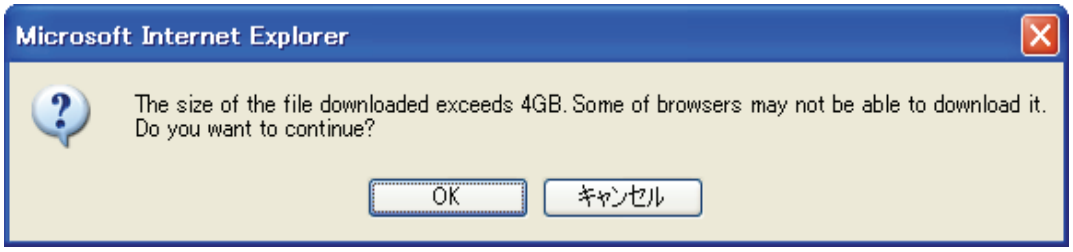
MM = Minutes (acquisition duration specified in minutes)

SS = Seconds (acquisition duration specified in seconds from 0 to 59)

Note: The time for which data can be recorded depends on the system bit rate and the capacity of the CF card.

⚠ CAUTION

The following dialog box appears in case that the file download size exceeds 4GB. Some of browsers may not be able to download it.



3.4.3 Operation & Status (Recorder)

*** This function is enabled only when the device operation mode is encoder mode.**

Operation & Status related to recording are displayed.

Selecting {3sec, 5sec, or 10sec} from [Auto update] enables automatic updating of the Operation & Status information in specified time intervals. Selecting {none} from [Auto update] disables automatic updating.

Figure 3-27 Operation & Status (Recorder)

You can control the recording operation. When the recording operation is "Stopped," clicking the START button starts recording. To stop recording, click the STOP button.

Table 3-27 Recorder Operation & Status Display Items

Item	Display
Recording mode	**{Recording until full / Overwrite / Record until start position}** Displays the recording mode selected in the Settings window.
Recorder	**{Recording / Stopped}** Displays the operation status caused by the setting in the Settings window or by the operation of the recording START or STOP button.
Media	**{Equipped: Normal / Equipped: Fault / Equipped: Media Full /Unequipped}** Displays whether an error related to recording to the CF card occurred or that a CF card is not mounted in the device.

* Notation: **{A/B}** indicates that either **A** or **B** is displayed.

⚠ CAUTION

The maximum system bit rate to record into CF card is limited up to 14.049 Mbps.

Recording to and reading from the CF card simultaneously is possible if the system bit rate does not exceed 6 Mbps.

Recording and simultaneous streaming using the sub encoder are limited to cases in which [Video resolution] is "352 x 240," "352 x 288," "176 x 112," or "176 x 144" as described in Sub encoder settings (Encode) in Section 3.3.1, "Setting (Encoder)."

3.5 Decoder

3.5.1 Setting (Decoder)

*** Settings is a group of setting items, of which 10 sets can be registered independently by selecting data numbers as in 3.2.1 Configuration Data.**

Set parameters related to stream receiving. Make the required settings by referring to **Table 3-28 Decoder Setting Items**.

The same screen is displayed for SETTINGS, <Input interface settings> Decoder ethernet, <AV output settings> Video and <Decoder settings> Decode which are located in the left frame on the Web screen. Clicking the tab for each brings the setup screen to the top of the right frame.

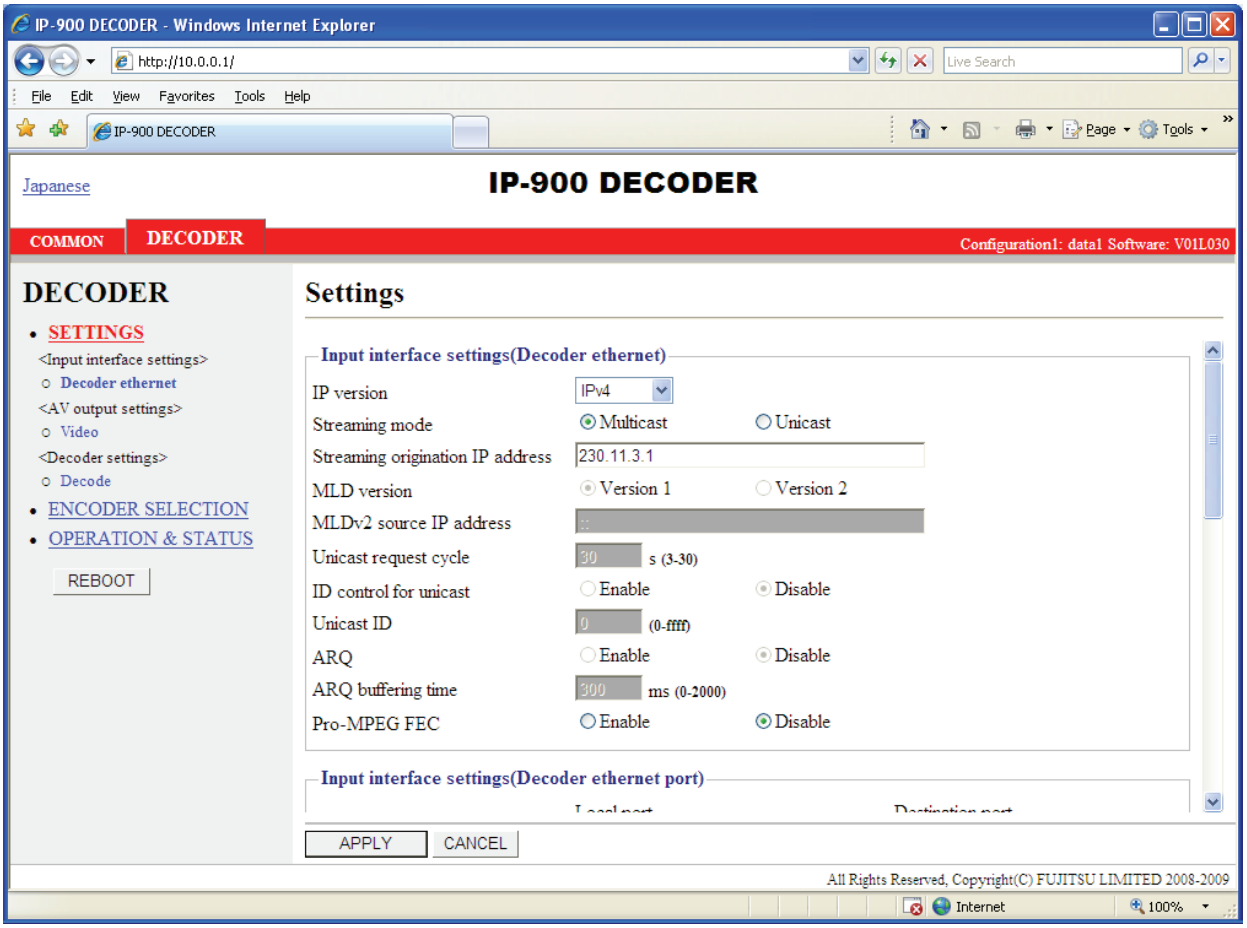


Figure 3-28 Setting (Decoder) Window

After the completion of the settings, click the APPLY button. The message below appears. Click OK to apply the settings. * Reboot is not required.

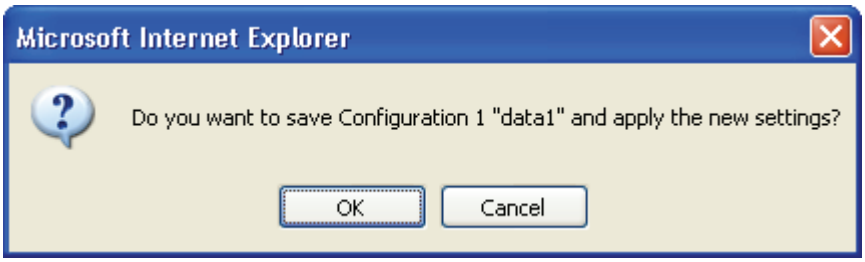


Table 3-28 Decoder Setting Items

	Item	Description	Parameter
Input interface settings (Decoder ethernet)	IP version	Specify the IP version for IP streaming.	- IPv4 (Default) - IPv6
	Streaming mode	Specify the type of broadcasting for IP streaming.	- Multicast (Default) - Unicast
	Streaming origination IP address	If "Unicast" is specified for [Streaming mode], specify the IP address of the streaming origination device. If "Multicast" is specified for [Streaming mode], specify the multicast address for streaming.	IP address (Default: 230.11.3.1) Setting the following values is inhibited: [IPv4] 240.0.0.0 to 255.255.255.255 (Class E) 0.0.0.0, 127.0.0.0 to 127.255.255.255 [IPv6] 0::0
	MLD version	If "IPv6" is specified for [IP version] and "Multicast" is specified for [Streaming mode], specify the MLD version of the MLD to be used for the group management of IPv6 multicast.	- Version 1 (Default) - Version 2
	MLDv2 source IP address	If "Version 2" is set for [MLD Version], specify the IPv6 address of the IPv6 multicast origination device that accepts receiving.	IPv6 address that is not the following: ffxx:xxxx:…:xxxx (multicast address) (Default: "::") * If this address does not match the origination IPv6 address of IPv6 multicast, streams cannot be received.
	Unicast request cycle	Specify the cycle at which the unicast stream request is sent.	- 3 to 30 seconds (Default: 30 seconds)
	ID control for unicast	If "Unicast" is specified for [Streaming mode], specify whether to report the ID for confirming the validity of the unicast stream request.	- Enable - Disable (Default) * If "Enable" is selected, the unicast ID of the encoder and that of the decoder must be in agreement to receive streams.
	Unicast ID	If "Enable" is selected for [ID control for unicast], specify the ID to be used for confirming the validity of a unicast streaming request.	Hexadecimal number between 0000 and ffff
	ARQ	If "Enable" is selected for [ID control for unicast], specify a valid ID value.	- Enable - Disable (Default)

	Item	Description	Parameter
	ARQ buffering time	Specify the wait time in msec for an ARQ retransmitted packet. * This will increase the delay by the time specified here.	0 to 2000 ms (Default: 300 ms)
	Pro-MPEG FEC	Specify whether to receive Pro-MPEG FEC packets to activate the Pro-MPEG FEC error correction method.	- Enable - Disable (Default)
Input interface settings (Decoder ethernet port)	Streaming port	Specify the own device port number used to receive streams.	1024 to 64000 (Default: 5000)
	Unicast request port	Specify the streaming request source port number (own device) in unicast streaming mode.	0, or10240 to 64000 (Default: 0) * If 0 is specified, one of the port numbers from 32768 to 61000 is automatically selected.
		Specify the streaming request destination port number in unicast streaming mode.	1024 to 64000 (Default: 9900)
	Encoder address report port	Specify the own device port number used to receive an encoder address report.	1024 to 64000 (Default: 5100)
	Pro-MPEG FEC port	Displays the port number of the own device used for receiving Pro-MPEG FEC.	You cannot specify this item. * This item is automatically set according to the [Streaming port] setting.
	ARQ control port	Displays the port number of the own device used for controlling ARQ.	You cannot specify this item. * This item is automatically set according to the [Streaming port] setting.
AV output settings (video)	Output format at startup	Specify the format of the video output signal to be used after the device is started or after the decoder settings are changed. * When any stream has been received, a setting conforming to the input format of the encoder is used.	- 1080i/59.94 - 1080i/50 - 1080i/60 - 720p/59.94 - 720p/50 - 480i/59.94 (Default) - 576i/50
	Analog video setup	Specify the setup level of the analog video output signal.	- Enable: 7.5 IRE - Disable (Default): Same as the pedestal level
	Concealment time	Specify the time it takes until the system recognizes that packets have not been received.	- 5 to 600 seconds (Default: 10 seconds)
	Display when no data receiving	Specify the video signal to be output when no packets are received.	- Blue (Default) - Gray
Decoder settings (Decode)	Decoding operation	Specify whether to enable receiving and decoding streaming video upon starting.	- Enable. - Disable. (Default)
	Error concealment	Specify whether to enable the freeze control that prevents block noise in the event of packet loss.	- Enable (Default) - Disable

	Item	Description	Parameter
	Jitter control buffer	Specify the buffering time for absorption of LAN network jitter. * This will increase the delay by the time specified here but reduce the video distortion caused by network jitter. * The video may be distorted if network jitter is generated for longer than the specified buffer time.	- 1 to 150 ms (Default: 150 ms)

3.5.2 Encoder Selection

*** This function is enabled only when the device operation mode is decoder mode.**

Click ENCODER SELECTION in the left frame of the Web screen. The Encoder Selection window appears in the right frame.

This window displays the status and IP address of the encoder ready to perform streaming. Specifying the encoder distributing a stream starts receiving the stream. Specify in advance the IP address of the decoder in the encoder as the destination. See Section 3.3.2for encoder setting. **Table 3-29 Encoder Selection Items** lists the display items.

Figure 3-29 Encoder Selection Window

The message below is displayed when the APPLY button is clicked after selecting the radio button for the encoder you want to select.Click OK to send a streaming request to the selected encoder. * Reboot is not required.

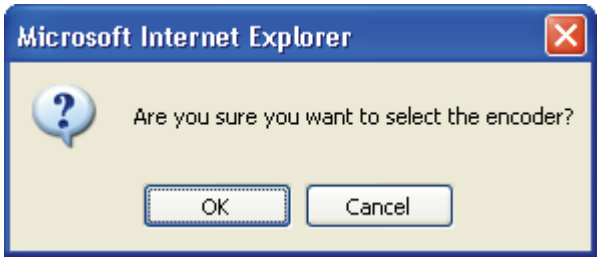


Table 3-29 Encoder Selection Items

Item	Display
Radio Button	Specify the encoder you want to select. If one is currently selected, "Selected" is displayed.
Encoder name	Displays the name assigned to the encoder.
Origination IP address	Displays the IP address of the encoder.
IP multicast address	Displays the multicast address for streaming when the encoder is performing multicast streaming.
Unicast request port	Displays the Unicast request port number defined in the encoder.
Streaming port	Displays the port number for receiving used by the decoder when the encoder is performing multicast streaming or unicast (simplex) streaming.
Streaming status	**{Streaming / Number of possible streams: x / Stopped}** Displays the streaming status of the encoder. Number of possible streams for encoder

* Notation: **{A / B}** indicates that either **A** or **B** is displayed.

3.5.3 Operation & Status (Decoder)

*** This function is enabled only when the device operation mode is decoder mode.**

Click OPERATION & STATUS in the left frame of the Web screen. The Operation & Status window appears in the right frame.

Operation & Status information related to the decoder, including the stream receiving status, can be checked.

Selecting {3sec, 5sec, or 10sec} from [Auto update] enables automatic updating of the Operation & Status information in specified time intervals. Selecting {none} from [Auto update] disables the automatic updating.

Figure 3-30 Operation & status (Decoder) Window

You can control starting and stopping of the receiving and decoding operation. When the decoding operation is "Stopped," click the START button to start decoding. To stop decoding, click the STOP button.

Table 3-30 Decoder Operation & Status Display Items

Item	Display
Decoder	**{Normal (Receiving) / Normal (No stream receiving) / Stopped}** Displays the decoder's operation status as a result of settings in the Setting screen or operation of the START/STOP button for receiving streaming.
Input interface	**{IPv4 / IPv6}** **Displays the IP version of received streams.**
Video encoding mode	**{H.264/MPEG-4 AVC / MPEG-2 (MODE=XXX) / MPEG-2 / ---}** Displays the video encoding mode of received streams. XXX: Fujitsu MPEG-2 PS mode number
Video output format	**{1080i/59.94 / 1080i/50 / 1080i/60 / 720p/59.94 / 720p/50 / 480i/59.94 / 576i/50}** Displays the video output format information.
System bit rate	**{--.---- Mbps / ---.- Kbps / ---}** Displays the system bit rate of received streams.
Decoding frame rate	**{29.97fps / 25fps / 30fps / 59.94fps / 50fps / 14.985fps / 12.5fps / 7.493fps / 6.25fps / 1.998fps / 1.67fps / ---}** Displays the frame rate of received streams.
Video resolution	**{1920×1080 / 1440×1080 / 960×1080 / 1280×720 / 960×720 / 640×720 / 720×480 / 720×576 / 352×480 / 352×576 / 352×240 / 352×288 / 176×112 / 176×144 / ---}** Displays the video resolution of received streams.
Video bit rate	**{-- Mbps/---Kbps/---}** Displays the video bit rate of received streams.
Audio	**{XXX / YY Kbps / ---}** XXX: **{MPEG1 Layer 2 /MPEG2 AAC/** Transparent**}** Displays the audio encoding format of received streams. YY: **{---Kbps}** Displays the audio bit rate of received streams.
Streaming IP address	**{XXX.XXX.XXX.XXX／---}** Displays the IP address of the streaming origination device. XXX.XXX.XX.XXX: IP address
Streaming port	**{XXXXX}** Own device port number used to receive streams. XXX: Port number
Unicast request port	**{XXX / ---}** Streaming request source port number in unicast streaming mode
ARQ	**{Operating (RTT=XXXmsec) / Stopped / ---}** Displays the ARQ operation status. During operation, the Round Trip Time is also displayed. XXX: Round Trip Time

* Notation: **{A / B}** indicates that either **A** or **B** is displayed.

Chapter 4
Troubleshooting

This chapter explains how to respond in case audio/video is not output or an alarm LED goes on.

4.1 Troubleshooting

If you think your IP-900 series is malfunctioning, follow the corresponding corrective action in the table below, according to the applicable conditions.

If a problem persists, contact the Fujitsu Service Center.

⚠WARNING

Electric shock
Contact your system administrator before checking the voltage of a power outlet. Otherwise, an electric shock may occur.

Table 4-1 Check Items and Corrective Action

Classification	Symptom	Check	Corrective action
Power / Starting up	Power cannot be turned on.	Is the power cable connected?	Make sure that the power cable is properly connected to the outlet.
		Is the outlet voltage normal?	Measure the voltage with a tester to confirm that the voltage is normal. If another device is connected to the same outlet, check the operation of the device.
Hardware	The ALM LED is on.	IP-900 series is faulty.	Troubleshoot from the control terminal.
	The LEDs excluding 100M and LINK/ACT are on.	Is the ambient temperature of IP-900 series higher than that in the specifications?	Adjust the temperature conditions so that the ambient temperature of IP-900 series meets the specifications.
		Is there any shielding material in the installation area?	Remove the shielding material.
Operation	Commands via a LAN cannot be used (the setup menu cannot be displayed).	Is the RDY LED blinking?	The hardware system is operating while the RDY LED is blinking. Wait until the LED remains on.
		Are the LINK LEDs on the IP-900 series and hub on?	If they are not, the UTP cable is not connected. Check the UTP cable.
		Issue a PING command to the IP address of IP-900 series. Does it respond?	If not: - Check the TCP/IP settings (to see whether the net mask and gateway address are valid) on the client PC. - Start IP-900 series with the default IP address and check the IP address by referring to Section 2.2, "Equipment Operation." If the problem persists, check the operation on the network side.
		Are the browser used and its settings valid?	- Make sure that IE6.0 SP2 or a later version is used. - Set "Disable proxy" on the browser, and retry the operation.

Classification	Symptom	Check	Corrective action
Video	No video is output (black screen)	Is the monitor power on?	Check the monitor power and operation.
		Is IP-900 series power on?	Confirm that the PWR-LED is on.
		Is IP-900 series correctly connected to the monitor?	Check the connection between the IP-900 series and monitor.
	Blue/gray screen is output.	Has decoding started?	See Section 3.5.3, "Operation & Status (Decoder)," and confirm that "Normal (Receiving)" is displayed for "Decoding."
		Is the setup normal?	Check the streaming address and port number settings.
		Is "Operating" displayed for "Encoding" on the streaming source device?	Confirm that the streaming source device is distributing streams. In the case of the IP-900 series encoder, see Section 3.3.4, "Operation & Status (Encoder)" and confirm that "Operating" is displayed for "Encoding." In the case of Unicast, confirm that the number of possible streams of encoder is observed.
	Only color bars are displayed.	Is the video input of the source device normal?	In the case of IP-900 seriese encoder, if video input is not received, the encoder outputs color bars or gray view according to the setting of "Display when no video signal input" on the AV input setup page. Check video input.
		Is the copy protected content like DVD input to HDMI interface?	The HDMI signal protected by HDCP (High-bandwidth Digital Copy Protection system) cannot be input to IP-900 series from the view point of the copy right protection. Check video input.
	Receiving video sometime stops or video image is unstable.	Is a receiving error present?	Check the number of data packets received (decoder information) according to Section 3.2.11, "Performance Statistics." Display the Performance Summary frame several times. If the number of data packets lost is counted up, the network load may be high or there may be a problem with the setting. Consult your network administrator.
		Is the MTU size too small?	Use the size recommended for the network used.
Audio	No sound is generated.	Is IP-900 series power on?	Confirm that the PWR LED is on.
		Is IP-900 series correctly connected to the speaker?	Check the connection between IP-900 series and speaker.
		Is the volume of the speaker used too low?	Check the volume of the speaker.
		Is an alarm generated on the streaming source device?	If an alarm is generated, see the operating manual of the streaming source device.
		Is the streaming source device correctly connected to the audio source?	Check the connection of the audio cable.
	Noise is generated.	Disconnect the audio output cable from IP-900 series Does it eliminate the noise?	If noise does not disappear even after the cable is disconnected, check the audio cable and audio output equipment.
		Is a receiving error present?	Check the number of data packets received (decoder information) according to Section 3.2.11, "Performance Statistics." Display the Performance Statistics frame several times. If the number of data packets lost is counted up, the network load may be high or there may be a problem with the setting. Consult your network administrator.
Data	Data communication is disabled.	Is the port setting normal? Is the port setting consistent with the destination device?	Check the setting according to Section 3.2.6, "Data Port."

Classification	Symptom	Check	Corrective action
		Is the operation mode consistent with the destination device?	Check the setting according to Section 3.2.6, "Data Port."
		Is the RS-232C setting consistent with the data input/output device?	Check the setting according to Section 3.2.6, "Data Port."
		Is the data input/output device operating normally?	Check the operation of the data input/output device.
Preparation	Software cannot be installed.	Are IP-900 series IP address, subnet mask and gateway address properly set?	Start IP-900 series with the default IP address according to Section 2.2, "Equipment Operation," and check the IP address. If the problem persists, check the operating status on the network side.
		Is the file specification valid? Is the license key entered correctly?	If the message "Installation was denied (incorrect file or license) Please try again here" is displayed, the file specification is invalid or the license key is entered incorrectly.

4.2 Alarm LED Goes On

This section explains corrective action to be taken if an alarm LED (ALM or INDWN) goes on.

The appropriate corrective action depends on the alarm code displayed. See the table below for this information.

Note: For information on how to check the alarm log, see Section 3.2.10 "Log" in this document.

Table 4-2 Alarm Codes and Corrective Action

Code	Corrective action
Lxxx	Check the network and partner device. If an error cannot be identified, contact your system administrator.
Exxx	Turn off the device and then turn it on again. If the device is still operating abnormally after being powered on again, contact your maintenance personnel. Then, he/she may ask the alarm code.
Ixxx	This indicates a loss of video input. Check the video output device and video cable connected to the video input terminal.

xxx: Indicates three alphanumeric characters. See Table 4-3, "Alarm Code List," for details.

Table 4-3 Alarm Code List

Code	Name	Description	Details (The part after the * mark is not displayed.)
0001	Boot (Power ON)	Normal start using the switch	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0002	Boot (Reset)	Normal start by reboot	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0004	Boot (Initial maintenance)	Normal start using the factory-shipped firmware	–
0005	Boot (Maintenance)	Normal start in maintenance mode	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0006	Software update	Software update	VxxLxxxCxx -> VyyLyyyCyy * Displays the new and old software versions. VxxLxxxCxx: Old software version VyyLyyyCyy: New software version
0007	Boot (Restart) (*6)	Restarted owing to CPU failure	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0008	Boot (Others) (*6)	Restarted owing to software failure	VxxLxxxCxx yyyy * Displays the software version and configuration name. VxxLxxxCxx: Software version yyyy: Configuration name
0009	Shutdown	Shut down by MNT button	–
000A	RTC initialization	RTC battery backup failure	–
000B	CF card initialization	CF card format error	–
000C	Configuration update	Operation data update	–
000D	Basic settings change	Change basic setting	–

Code	Name	Description	Details (The part after the * mark is not displayed.)
000E	Configuration data switching	Switch configuration data	xxxx -> yyyy * Displays the old and new configuration names. xxxx: Old configuration name yyyy: New configuration name
000F	Operation data initialization	Operation data initialized	–
0010	Option update	Option installed	HD
L001	LINK error (LAN)	Link disconnection at a LAN port occurred	–
*L001	Link alarm recovery	Recovered from link disconnection at a LAN port	10BaseT_HD/10BaseT_FD/100BaseTX_HD/100Base TX_FD * Displays the operating status of the LAN interface
L006	Time server synchronization failure	Time synchronization with the time server failed	–
*L006	Time server synchronization	Time acquisition from the time server was successful	–
L009	DHCP connection failure	DHCP server is disconnected	–
*L009	DHCP connection	Connected to the DHCP server	xxx.xxx.xxx.xxx/yy,zzz.zzz.zzz.zzz * Displays the IPv4 address acquired from the DHCP server. xxx.xxx.xxx.xxx: IPv4 address yy: Subnet mask bit count zzz.zzz.zzz.zzz: Gateway address
L00A	PPPoE connection failure	PPPoE server is disconnected	–
*L00A	PPPoE connection	Connected to the PPPoE server	xxx.xxx.xxx.xxx/yy,zzz.zzz.zzz.zzz * Displays the IPv4 address acquired from the PPPoE server. xxx.xxx.xxx.xxx: IPv4 address yy: Subnet mask bit count zzz.zzz.zzz.zzz: Gateway address

Code	Name	Description	Details (The part after the * mark is not displayed.)
L00E	DHCP connection update	IP address change occurred during DHCP connection	xxx.xxx.xxx.xx1/y1,zzz.zzz.zzz.zz1 -> xxx.xxx.xxx.xx2/y2,zzz.zzz.zzz.zz2 * Displays the old and new IPv4 addresses acquired from the DHCP server. xxx.xxx.xxx.xx1: Old IPv4 address y1: Old subnet mask bit count zzz.zzz.zzz.zz1: Old gateway address xxx.xxx.xxx.xx2: New IPv4 address y2: New subnet mask bit count zzz.zzz.zzz.zz2: New gateway address
L00F	PPPoE connection update	IP address change occurred during PPPoE connection	xxx.xxx.xxx.xx1/y1,zzz.zzz.zzz.zz1 -> xxx.xxx.xxx.xx2/y2,zzz.zzz.zzz.zz2 * Displays the old and new IPv4 addresses acquired from the PPPoE server. xxx.xxx.xxx.xx1: Old IPv4 address y1: Old subnet mask bit count zzz.zzz.zzz.zz1: Old gateway address xxx.xxx.xxx.xx2: New IPv4 address y2: New subnet mask bit count zzz.zzz.zzz.zz2: New gateway address
L010	Stateless address acquisition failure	IPv6 stateless address acquisition failed	–
*L010	Stateless address acquisition	IPv6 stateless address acquired	xxxx:xxxx:…:xxxx/yy * Displays the IPv6 address acquired from the router. xxxx:xxxx: … :xxxx: IPv6 address yy: Subnet prefix length
L011	Stateless address update	IPv6 stateless address update occurred	xxxx:xxxx:…:xxx1/y1 -> xxxx:xxxx:…:xxx2/y2 * Displays the old and new IPv6 addresses acquired from the router. xxxx:xxxx: … :xxx1: Old IPv6 address y1: Old subnet prefix length xxxx:xxxx: … :xxx2: New IPv6 address y2: New subnet prefix length
I001	SDI input down	HD/SD-SDI input signal not detected	–
*I001	SDI input down recovery	Normal HD/SD-SDI input	–

Code	Name	Description	Details (The part after the * mark is not displayed.)
I002	HDMI input down	HDMI input signal not detected	−
*I002	HDMI input down recovery	Normal HDMI input	−
I003	Analog input down	Analog video input signal not detected	−
*I003	Analog input down recovery	Normal analog video input	−
I011	Video input synchronization error	Video input PLL synchronization error occurred	−
*I011	Video input synchronization error recovery	Recovered from video input PLL synchronization error	−
I021	Input data error (*8)	Count-up occurred in the performance statistics error counter	#xxxxxxxxxxxxxxxx * 64-bit hexadecimal number. For the meaning of each bit, see Table 3-12, "Input data error bit format".
*I021	Input data error recovery (*8)	Recovered from count-up of the performance statistics error counter	−
E001	Power error (*1)	Power failure occurred	#1 * Power failure on CNT board #2 * Power failure on COD board
E003	Temperature error occurrence (*5)	Extreme temperature (shutdown processing started)	* Details are as follows: #1/#2: Number of the temperature sensor that has detected a temperature error t1: Temperature indicated by temperature sensor 1 t2: Temperature indicated by temperature sensor 2 xxx: FAN rotational speed
E004	Flash ROM error (*1)	Internal flash ROM access error occurred	/dev/mtd0 to 15 * Displays the occurrence range of access error.
E00A	Flash ROM check sum error (*1)	Operation data error detected in internal Flash ROM	Software bundle software configuration configuration#1〜#10 * Displays the occurrence range of check sum errors.
E010	FAN error (*2)	FAN error (low speed) or stopped	xxxRPS * xxx: FAN rotational speed
*E010	FAN error recovery (*2)	FAN speed recovery	xxxRPS * xxx: FAN rotational speed

Code	Name	Description	Details (The part after the * mark is not displayed.)
E013	Temperature warning (*2)	Thermal alarm (alarm only) detected	#1 TEMP1=t1 TEMP2=t2 FAN=xxxRPS #2 TEMP1=t1 TEMP2=t2 FAN=xxxRPS * Details are as follows: #1/#2: Number of the temperature sensor that has detected a thermal alarm t1: Temperature indicated by temperature sensor 1 t2: Temperature indicated by temperature sensor 2 xxx: FAN rotational speed
*E013	Thermal alarm recovery (*2)	Recovered from thermal alarm	#1 TEMP1=t1 TEMP2=t2 FAN=xxxRPS #2 TEMP1=t1 TEMP2=t2 FAN=xxxRPS * Details are as follows: #1/#2 : Number of the temperature sensor that has detected a thermal alarm recovery t1: Temperature indicated by temperature sensor 1 t2: Temperature indicated by temperature sensor 2 xxx: FAN rotational speed
E082	CODEC1 error (*4)	Main HD CODEC LSI error detected	–
*E082	CODEC1 error recovery (*4)	Recovered from main CODEC LSI error	–
E083	CODEC2 error (*4)	Sub CODEC LSI error detected	–
*E083	CODEC2 error recovery (*4)	Recovered from sub CODEC LSI error	–
E084	CF card access error (*3)	CF card access failure detected	–
E085	CF card power error (*3)	Overcurrent to CF card detected	–
E08B	SUB CPU1 error (*4)	SUB CPU1 error detected	–
*E08B	SUB CPU1 error recovery (*4)	Recovered from SUB CPU1 error	–
E08C	SUB CPU2 error (*4)	SUB CPU2 error detected	–
*E08C	SUB CPU2 error recovery (*4)	Recovered from SUB CPU2 error	–
E08E	Clock error (*1)	Clock error or interruption detected	#1 to #4 * Indicates the location where a clock error has occurred.
E08F	Memory error (*1)	SDRAM memory check error detected	#1 to #7 * Indicates the location where a memory error has occurred.
E093	Sending buffer overflow (*7)	Sending buffer overflow occurred	#1, #2 * Indicates the location where a sending buffer overflow has occurred.

Code	Name	Description	Details (The part after the * mark is not displayed.)
*E093	Sending buffer overflow recovery (*7)	Recovered from sending buffer overflow	#1, #2 * Indicates the location of sending buffer overflow recovery.

*1: After occurrence of this error, the ALM LED remains on. The device needs to be rebooted to turn off the ALM LED.
*2: The ALM LED blinks while this alarm is active. The LED goes off when the alarm cause is recovered.
*3: After occurrence of this error, the ALM LED remains to blink.
*4: After occurrence of this error, the operation is retried for recovery. If the retry for recovery is unsuccessful, the ALM LED remains on. The device needs to be rebooted to turn off the ALM LED.
*5: If an extreme temperature is detected, all LEDs except LINK/ACT, 10/100 go on. The device needs to be rebooted to turn off the LEDs.
*6: The ALM LED is on while this alarm is active. The LED goes off when the error cause is recovered.
*7: The ALM LED blinks while this alarm is active. The LED goes off when the alarm cause is recovered.
In case that the settings exceeds the capacity of the IP network, please reconfigure them to meet the network requirement.
*8: The IN DWN LED blinks while this alarm is active. The LED goes off 10 seconds after the error cause is recovered. See 3. 2. 11 Performance Statistics for the details of the statistical information counter about the alarm occurrence.

The following table summarizes the LED display detail.

Table 4-4 Alarm LED Detail

LED	Description
PWR	Goes on when the device is powered on.
RDY	Blinks in green when the device ready for operation and stays on when the device runs in operation state. This LED also blinks in orange when the device is ready for maintenance mode, which can be entered by turning on the power while holding down the MNT button, and stays on in orange when the device runs in maintenance mode.
IN DWN	Remains off during normal operation, and goes on in orange when input signals are interrupted. LED also blinks when DVB-ASI is selected with the communication line-dependent setting of the decoder or encoder under the non-installation of option boards. It blinks for 10 seconds also when the statistics input error counter is incremented.
ALM	Alarm LED, which blinks or goes on when a device alarm occurs. For conditions of whether it blinks or goes on, see Table 4-3, "Alarm Code List."
DEC	Goes on in green during decoding. This LED stays off when decoding is not being performed. It blinks in green when a decoding error occurs. (*1)
OPT	Lights in green when the HD upgrade option is installed. (*2)

*1: Only for the IP-900D/IP-900IID
*2: Only for the IP-900E

Appendixes

Glossary

AES/EBU

AES (Audio Engineering Society) and EBU (European Broadcasting Union) standardized for the professional digital audio I/O (IEC-60958 TYPE-1.) It was applied to ANSI (American National Standard Institute) too.

Alarm Log

A record of errors occurred on devices and communication lines.

Ancillary Data

Transmitted kinds of data located in the blanking area of digital video interface (e.g., audio data and time code data.)

ARP (Address Resolution Protocol)

A protocol that is used to acquire the MAC address of the transmission destination of Ethernet frames. This protocol uses an IP address to acquire the MAC address. If the MAC address of the transmission destination of IP packets is unknown, an ARP packet requesting the MAC address is broadcast. The MAC address is acquired using the response to this request.

ARQ (Automatic Repeat Request)

An error correcting method that error packet will be re-transmitted automatically when packet error is detected at the receiver (Decoder.) IP-9500/IP-900 series products have the real-time high error-control ability, equipped with the original “FEC + ARQ hybrid method.”

BISS (Basic Interoperable Scrambling System)

A scrambling system formulated by the EBU in May 2002. This system has 3 modes: MODE 0, MODE 1 and MODE E. In MODE 1, a 12-character (48-bit) session word is used for encryption and decryption. In MODE E, a 16-character (64-bit) encrypted session word and 14-character (56-bit) injected ID are used for encryption and decryption. In MODE 0, encryption is not used.

BB (Black Burst)

Sync signal of black level’s video signal which is used to be synchronize

BNC (Bayonet Neill Concelman)

One of the coaxial cable connecters which have the 75ohms impedance. It uses the lock called Bayonet Lock and is very easy and compact to use. It is used for the test gear and the digital audio because it supports up to 4GHz high frequency.

Browser

A generic name for programs that support a user who wants to fetch a desired option from a number of options. Using a browser, the user can trace links on the World Wide Web to access such multimedia information as text, audio, and video by the simple selection of items with a mouse or other pointing device.

Carrier Frequency

Radio wave output frequency of a modulator card. Low-frequency transmission data is overlaid on a high-frequency signal during modulation, and this high-frequency signal is called a carrier wave. The frequency of a carrier wave is called the carrier frequency.

CAT (Conditional Access Table)

An information table to support the limited receiving.

CC (Closed Captioning)

Data for broadcast captioning. It is multiplexed at ancillary data area, virtual or horizontal blanking area of video signal, in HD/SD-SHI signal.

CF Card

A memory card of CompactFlash that is used as storage for recorded data in the IP-9500 series/IP-900 series products.

Chroma Format

Representation of the ratio of the brightness component (Y) and 2 color-difference components (Pb and Pr) expressed for an image. The 2 formats generally used are 4:2:2 and 4:2:0.

CSC4:2:2 (4:2:2 Chroma Scalable Coding)

4:2:2 encoding system unique to the IP-9500 series. In this system, the encoder applies bandwidth splitting to the color-difference signal of an input 4:2:2 video stream and generates two video streams: a 4:2:0 video stream and a 0:0:2 video stream. The 4:2:0 video stream includes a brightness signal and low-frequency color-difference signal. The 0:0:2 video stream includes only a high-frequency color-difference signal. Then, the encoder encodes two video streams. The IP-9500e decoder decodes these two video streams and combines the low-frequency and high-frequency color-difference signals to output the 4:2:2 video stream. Since a conventional 4:2:0 decoder can decode and output the 4:2:0 stream included in a CSC422 stream, the CSC422 encoding system achieves scalability between 4:2:2 video and 4:2:0 video.

Downconverter

Converting from HD-SDI signal to SD-SDI signal. 3 modes are available: Squeeze, Side cropped, and Letter box.

DVB-ASI (Digital Video Broadcasting - Asynchronous Serial Interface)

Standard interface in DVB (Digital Video Broadcasting: European Digital Broadcasting standardization organization) and used in MPEG CODEC most commonly. It is the asynchronous serial interface and standardized in ETSI 101 891.

DVB-S (Digital Video Broadcasting - Satellite)

Standard interface for satellite broadcasting formulated by the DVB (European standardization body for digital broadcasting.)

DVB-S2 (Digital Video Broadcasting - Satellite - Second Generation)

Successor standard to DVB-S. DVB-S2 adopts more efficient error correction encoding and multi-value modulation with 16 values or more, ensuring an increased transmission capacity. It supports various data formats in addition to MPEG-2 TS. This enables flexible operation because the modulation method, encoding rate, and roll-off rate can be changed.

Embedded Audio

A method to embed AES/EBU digital audio signal into the blank area of SDI (Serial Digital Interface) signal.

Encrypted Session Word

16-character (64-bit) word specified by the user in BISS MODE E. A session word is derived from the specified encrypted session word (and injected ID.) Then, encryption or decryption in BISS MODE E is performed.

Ethernet

The protocol that has been standardized by the IEEE 802.3 Committee, defining the physical and link layers of a LAN. Typical Ethernet connections use twisted pair cables, such as 10BASE-T or 100BASE-TX, and switching hubs.

Factory Shipment Firmware

Firmware that is installed at a factory before shipping and has the minimum function like the installer, and so on.

FEC (Forward Error Correction)

A method that the sender transmits redundant packet to the receiver for error correction in addition to the sending packet. It enables the

receiver to correct errors without the need to request the sender for retransmission.

Flow Control

The procedure for controlling the flow of data between two devices. Its purpose is to prevent data from being lost when a device buffer becomes full.

GATEWAY

A node that connects network systems that use different protocols. A gateway basically converts one protocol into another to support operation between two networks. In a looser sense, gateway sometimes means a machine that transfers information between any two networks.

GOLD CODE SEQ N

An index number that generates the initial values used to generate the Gold code, which is used for physical layer scrambling processing in the DVB-S2 standard.

GOP (Group Of Pictures)

The smallest of the structural units composing a movie. A GOP consists of 3 types of frames: I frame, P frame, and B frame.

HDCP (High-bandwidth Digital Content Protection system)

One of the copy protection technologies for the illegal content copy between the video player and the video display.

HD-SDI (High Definition television - Serial Digital Interface)

HD-SDI is the serial digital interface to transmit HD (High Definition) video signal, which transmission rate is 1.485 Gbps. It can transmit multiplexing HD video signal, PCM audio signal and data signal like time stamp.

HDMI (High Definition Multimedia Interface)

One of the multimedia interfaces integrated the audio, video and control and communicate each other.

H.264

One of the video compression coding systems standardized in ITU (International Telecommunication Union) in May, 2003. It is also standardized as a part of MPEG-4 (MPEG-4 part 10 Advanced Video Coding) in ISO (International Organization for Standard.) Therefore, it is commonly called H.264/MPEG-4 AVC or H.264/AVC, showing both of parties.

This technology is used for the various applications from the low bit rate and low resolution like the mobile TV to the high bit rate, high resolution like HDTV. It is improved that the data capacity is half comparing MPEG-2 used wide spread.

HTTP (Hyper Text Transfer Protocol)

The protocol for tranferring files and other data between a Web server and a browser.

HUB

A concentrator required to use 10Base-T or 100Base-TX as a local area network (LAN) standard. Twisted-pair cables are used to connect hubs. A high-speed hub conforms to 100Base-TX. A switching hub has switching functions.

IBBP/IBP/IPPP/PPPP

Video encoding structure with using I, P, and B frame.

I frame: Intra frame. Frame encoded by using internal video information.

P frame: Prediction Picture frame. Frame encoded by using correlation with previous frame.

B frame: Bi-directional Interter frame. Frame encoded by using previous and next coming I frame or P frame.

IF-band

A part of a very high frequency band (VHF band: 30 to 300 MHz.) The IF-band is selected only if an IF-band modulator card is used for operation.

Injected ID

14-character (56-bit) ID specified by the user in BISS MODE E. A session word is derived from the specified injected ID and encrypted session word. Then, encryption or decryption in BISS MODE E is performed.

IP (Internet Protocol)

A protocol used for transferring packets between host computers anywhere on the Internet. The identifiers used to identify the destinations and senders for packet transfer are called IP addresses. An IP address is a 32-bit value that can identify a network and a host on the network. Each host that communicates on the Internet must be assigned a unique IP address.

IP Satellite Mode

A function used in transmission using IP satellite connection. It distributes streams that inhibit the bit stuffing function of the HDLC procedure, which is used in IP satellite connection (This function inserts 0 after five 1's in a row.)

IPv6

IP protocol that is the successor to IPv4, which is currently the dominant IP protocol version on the Internet. The network address length is extended from 32 bits in IPv4 to 128 bits to solve the address space exhaustion problem that is worsening with the growth in use of the Internet. IPv6 also provides stateless address auto-configuration that allows an IPv6 address to be automatically generated based on the information from the router and the MAC address of the IP-900 series.

IP Address

A numeric identifier that identifies a node (e.g., a computer) operating under TCP/IP. An IP address is a 32-bit value divided into four 8-bit segments separated by dots (e.g., 200.10.101.1).

IP Multicast

TCP/IP term that refers to a technology by which the same data is transmitted to many destinations at the same time. An address class, called Class D, is used for multicasting. The first four bits (1110) of a Class D address specify multicasting, and the remaining 28 bits specify a multicast group.

IP-9500 Basic Software

The name of the IP-9500 control software. It is installed on the IP-9500 and allows the IP-9500 to run as an encoder or decoder based on the selection on the Web screen.

IP-9500D Basic Software

The name of the IP-9500D control software. It is installed on the IP-9500D and allows the IP-9500D to run as a decoder.

LAN (Local Area Network)

A data communication system that covers a limited area of about 6 miles (10 kilometers) and provides transmission speeds in the mid to high range.

L-band

The name of the frequency band from 0.5 to 1.5 GHz, according to the classification of microwave frequencies by IEEE. The L-band belongs to the ultra-high frequency band (UHF band: 03 to 3 GHz.) The L-band is selected only if an L-band modulator card is used for operation.

LCD (Liquid Crystal Display)

A display device utilizing liquid crystal cells. It works by having 2 sheets of a polarizing material with liquid crystal in between, when an electrical current is applied to the liquid crystal molecules they become scattered allowing light to pass through. LCD itself does not produce luminescence and uses reflected light in the light and fluorescent (backlight) in the dark. There are 2 main types: simple matrix LCD such as

STN and DSTN, and active matrix LCD such as TFT.

LED (Light-Emitting Diode)

The IP-9500/IP-900 series has power LED and alarm LED lamps. The power LED lamp lights in green to indicate that the power is on. The alarm LED lamp lights in red to indicate that an alarm has occurred.

Letter Box

One of the methods to downconvert video sourse of screen size ratio (aspect ratio) from 16:9 to 4:3 screen size. The resulting image has black bars at both upper/down parts of the video.

MLD v1 (Multicast Listener Discovery version 1)

A protocol that has been defined by RFC2710. It is used to detect a multicast listener that receives a multicast datagram.

MLD v2 (Multicast Listener Discovery version 2)

A protocol that has been defined by RFC3810. In addition to the MLD v1 supporting function, it has an information source filtering function, which enables the specification for receiving only the packets sent from specific origination addresses (or addresses that are not specific origination addresses).

MPEG-4

Video data compression method that is a part of the MPEG standard. MPEG-4 was designed to distribute video images of low picture quality (due to a high compression ratio) over slow communication lines (e.g., cellular phone and telephone lines.) MPEG-4 was also designed to transmit video together with audio at about 64 kilobits per second.

NTSC (National Television Standards Committee)

The standard for analog television systems established by a US standardization body.

NTSC images are made of 29.97 interlaced frames per second, each of which is composed of 525 scan lines in total.

Original network ID

ID for identifying a transport stream. Each transport stream is identified by the combination of an original network ID and a transport stream ID.

PAL (Phase Alternating Line)

The standard for analog color television broadcasting developed in Germany. PAL images are made of 25 interlaced frames per second, each of which is composed of 625 scan lines in total.

PAT (Program Association Table)

Table included TS (Transport Stream) and the list in PMT PID. The PID of PMT is 0.

PES (Packetized Elementary Stream)

A packetized method provided by MPEG2 System. Encoded video or audio bit streams are called “Elementary Stream.” These streams are packetized by standard and are called “PES.”

PID

A packet identifier which has the 13 bits information, included in TS packet.

Pilot Mode

A mode adopted in the DVB-S2 standard to improve synchronization characteristics at a low C/N ratio. This device has a setting for specifying whether to insert the pilot signal for synchronized playback into physical layer frames.

Ping

A command supported by operating systems such as UNIX and Windows that are used in a TCP/IP network to determine whether IP packets can reach or have reached a communication destination.

PMT (Program Map Table)

ID table which identifies audio, video, and so on.

PPPoE (Point to Point Protocol over Ethernet)

PPPoE is a specification for connecting the users on an Ethernet to the Internet. PPPoE supports authentication and enables a point-to-point connection to be established in the normally multipoint architecture of Ethernet.

PPS (Picture Parameter Set)

A header in NAL (Network Abstraction Layer) of H.264/AVC, which information on the whole picture encoding is described.

Private PES

Packetized elementary stream standardized by MPEG2 System that user can use arbitrarily for data transmission.

Pre-Filter

Filter that works before encoding video signal for an improvement of video quality with violent movement at low encoding rate.

Profile

This defines various encoding formats used for compressing the image. Profile can be changed depending on the use of the compressed image.

Program Number/Service ID

ID for identifying a channel (service) provided by a broadcasting company. By specifying a program number/service ID, you can select an arbitrary transport stream from multiple transport streams.

Pro-MPEG FEC

FEC method standardized at Pro-MPEG Forum (Professional-MPEG Forum). Redundant packet consists of 2 dimensions (columns x rows) are sent for this method.

Proxy

A computer network service that allows clients to make indirect network connections to other network services.

PS (Program Stream)

An MPEG-2 method for multiplexing video, audio, and data, the PS method is used for transmission and storage in an error-free environment.

PSI (Program Specific Information)

This is the information which program each ES in TS packet belongs (e.g., PAT, PMT, and CAT.)

QPSK, 8PSK (Quadrature Phase Shift Keying, 8 Phase Shift Keying)

PSK is a modulation system that expresses information using a combination of multiple carrier waves with a phase shift between them. The system that uses 4 waves with phase-shifts separated by an angle of 90 degrees is called QPSK. Each modulated signal (one symbol) can transmit two bits of data. The system that uses eight waves with phase-shifts separated by an angle of 45 degrees is called 8PSK. Each modulated signal (one symbol) can transmit three bits of data.

Refresh Cycle

Frame cycle between I frames for Quality (IBBP) and Motion (IBP) of Encoding control mode. Frame cycle of updating one screen image by using intra-slice for Low Latency (PPPP) of Encoding control mode.

Roll-off Factor

Another name for roll-off rate. The factor for the processing of spectrum forming for transmission data is called the roll-off factor. The purpose of the processing is to increase the frequency usage rate while suppressing interference in the carrier. Generally, a larger factor increases interference in the carrier but also increases resistance to selective phasing.

RS-232C

Interface standard that was mainly established by the Electronics Industry Association (EIA) for communication between data terminal and data communications equipment.

RTP

Abbreviation of real-time transport protocol. This transport protocol is for transferring the image data or the voice data in real time.

SD-SDI (Standard Definition television - Serial Digital Interface)

Standard definition digital video interface standardized in SMPTE259M.

Session Word

12-character (48-bit) word specified by the user in BISS MODE 1. The specified session word is used for encryption or decryption in BISS MODE 1.

Side Cropped

One of the methods to downconvert video sourse of screen size ratio (aspect ratio) from 16:9 to 4:3 screen size. The resulting image has both left and right sides cropped.

SNMP v1 (Simple Network Management Protocol version 1)

Communication protocol defined by RFC1065, RFC1066, and RFC1213 for monitoring and controlling network devices. The protocol defines a framework for network management protocols and other protocols. This framework is used for SNMP v2c, SNMP v3, etc.

SNMP v2c (Simple Network Management Protocol version 2c)

Communication protocol defined by RFC1901 and RFC1908 for monitoring and controlling network devices. The protocol enables communications using v2, which has higher communication security and performance, on a community basis similar to communications using v1.

Spectrum

Specified spectrum sense for the IP-9500 series can be "Normal" or "Inverted." Select the setting according to local configuration of your wireless devices and transponders.

Symbol Rate

Symbol transmission speed defined by the number of symbols sent to the transmission line per second. The unit of measurement is symbol/s.

System rate

Data amount per second of the encoding data including up to MPEG2 system. The data for the network packet or FEC packet is not included.

Subnet Mask

Mask value that is used to obtain the network address of a subnet from an IP address. The subnet address is obtained when the IP address is ANDed with the subnet mask.

TCP (Transmission Control Protocol)

Abbreviation of Transmission Control Protocol, the protocol required for direct connection to the Internet. In the OSI reference model, TCP corresponds to the transport layer and IP corresponds to the network layer. TCP has been a global standard protocol that is supported by major operating systems, including UNIX, OS/2, and Windows.

TOS (Type Of Service)

Type of service that can be added within IP packets. It is used for controlling the order of priority of packets in the router etc.

Tri-sync

Sync signal used for High Definition TV. There is a feature of not generating the phase gap even if sync signal shrinks by the signal attenuation.

TS (Transport Stream)

Abbreviation of Transport Stream, which is an MPEG-2 systems for multiplexing video, audio, and data. A stream consists of packets, each of

which has a fixed length of 188 bytes. The TS method is used for transmission in an environment such as ATM communication or digital broadcasting where errors can occur.

TSC (Transport Scrambling Control)

A field in MPEG-2 TS header information, which indicates the scrambling mode of a stream. The TSC of a stream that is encrypted with the BISS method is defined as 2.

TTL (Time To Live)

Abbreviation of Time To Live, which indicates the survival time of a packet on a network. If a packet sent to a network happens to enter a loop because of a setting error on a router, it will not survive forever, but will be discarded when the specified survival time is reached.

TTS (Time stamped Transport Stream)

192byte packet consist of basic 188byte MPEG TS and 4byte-timestamp counted by 27MHz clock.

UDP (User Datagram Protocol)

Abbreviation of User Datagram Protocol. UDP is a TCP/IP transaction protocol used for specific applications such as remote network management and naming service access.

Unicast

Communication with a station at a single address (that is, most general one-to-one communication.)

USB (Universal Serial Bus)

One of the serial bus standards for connecting peripheral devices to a PC. The first USB1.0 was developed in 1996. Today, USB2.0 provides greater enhancement in transfer speed and load reduction, which made it spread rapidly and became the most commonly used standard for PC environment.

UTP Cable

UTP is an abbreviation of unshielded twisted pair. A UTP cable is an unshielded pair of wires twisted together, and is used for Ethernet cabling and other purposes.

UTC (Coordinated Universal Time)

International standard time. The UTC is calculated based on the time measured by an atomic clock, which uses the second in the SI unit system as a reference value, making adjustments that insert leap seconds to compensate for the time difference from Greenwich Mean Time (GMT.)

Video User Data

Data area standardized by H.264 video encoding method that user can use arbitrarily for data transmission.

VITC (Vertical Interval Time Code)

Time code signal embedded in the vertical blanking area of video sync signal.

10BASE-T

LAN that uses unshielded twisted-pair (UTP) cables and complies with the IEEE 802.3 standard. 10Base-T connection is made simple by using a concentrator called a hub without any special cabling work required. For this reason, 10Base-T is the most widely used form. The maximum cable length is 100 meters.

100BASE-TX

One of the 100Base LAN standards (also called Fast Ethernet.) 100Base-TX supports transfer rates of 100 megabits per second. Other 100Base standards are 100Base-T4 and 100Base-FX. 100Base-TX differs from the other 100Base standards in the type of cable used (UTP cable.) It also uses RJ-45 connectors, which are similar to the modular jacks used for telephones.

1000BASE-T

One of the Gigabit Ethernet standards which have the maximum 1Gps speed. It was standardized as IEEE802.3ab in 1999. This is the standard that uses the UTP cable of the category 5 (CAT5) or the enhanced category 5

(CAT5e) and uses the all of 4 pairs signal wires. The maximum cable length is 1000 meters and the network topology is the star type.

16APSK (16 Amplitude Phase Shift Keying)

APSK is a modulation system that expresses information using a combination of multiple carrier waves with different phases and amplitude values. Each modulated signal (one symbol) can transmit four bits of data.

4:2:0

One of the video formats. In this format, the numbers of pixels for the color-difference components (Pb and Pr) are half the number of pixels for the brightness component (Y) in the horizontal and vertical directions.

4:2:2

One of the video formats. In this format, the numbers of pixels for the color-difference components (Pb and Pr) are half the number of pixels for the brightness component (Y) in only the horizontal direction.

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User's Guide

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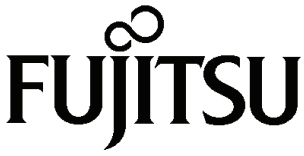
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